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Editorials

TAKE CARE OF OUR WAR VETERANS IN LOCAL CIVILIAN HOSPITALS. IT WILL BE BETTER FOR THE VETERAN HIMSELF—BETTER FOR THE TAX PAYER—IT WILL HELP PREVENT A BUREAUCRACY THAT KNOWS NO MASTER

Drastic disparagement should greet the government's plan for building hospitals in which to care for our disabled veterans. This is only another development of the already staggering bureaucratic plant, and will not give these poor men as competent care as is now available.

The number of efficient, splendidly run hospitals located throughout the United States is more than ample to care for our veterans and to care for them in a far better fashion than any the government can devise. There is not a single instance on record of government management of any industry or economic unit that has been perfected in private hands, that fails to show anything else but waste and inefficiency, often an irremediable impairment. What happened to the railroads under government control is still an industrial havoc that calls for tears.

In ninety-nine per cent. of the cases of disabled veterans the men would be far better off if cared for in the local hospital of their home towns where separation from relatives and friends would not be an added item to an already brimming over Book of Job.

Apart from the less satisfactory results from a psychological as well as a physiological standpoint, the erection of these huge governmental lazar-houses would install and establish firmly a bureaucracy and a system of overcentralization unparalleled in the history of medical care for the sick.

Further, and in these days of crisis when the whole world sits bankrupt wondering how and with what to meet its obligations, this program will call for even more throwing of money out

of the window. Were there a lack of hospital facilities for accurate comfortable scientific care of our veterans the question would be different. The disabled veterans deserve more than the world can ever pay. They merit the best of hospitalization. This they stand a poor chance of having if this bureaucratic, unscientific, costly, wasteful, unnecessary scheme goes through.

In the present system of civilian hospitals facilities are ample. Better care can be received nowhere on earth. To keep our veterans in these existing, smoothly and capably functioning hospitals is the indicated procedure. In every way it is better for the three elements most vitally concerned. It is better for the veteran himself; it is better for the taxpayer and in its stride away from the trend towards over-centralization it is far better for the nation. After all, we were founded and we have existed as a republic.

Now the amendment of the Veterans Act by the last Congress entitles to hospitalization men with non-service-connected disabilities, which of course, means that many more hospital beds must be provided to care for these men, probably about 130,000 at a cost of about $3,500 each. Now, when the A. M. A. met in June, 1931, the House of Delegates adopted a resolution proposed by Dr. H. H. Shoulders of Tennessee advising against the government's further construction of hospitals, and recommending that sick and disabled veterans be treated in local hospitals.

The adoption included an amendment for the appointment of a committee to study this problem. Its personnel includes representatives of the A. M. A., the American Legion and the American Hospital Association. It has consulted with the American Legion Rehabilitation Committee, the Medical Advisory Counsel of the Veterans Bureau and the U. S. House of Representatives Committee on World War Veteran Legislation. Though the American Legion was in favor of further hospital construction, the majority of the committee voted to use local hospitals if standardized. While the cost per day per patient in the local hospital is practically the same expense as in a government institution—i. e., about $4.00,—this item of expense in the government budget does not cover the cost of hospital construction and equipment that will run about $3,500 per bed, exclusive of interest on the bonds or about another $100 per bed per year and all this on construction of what would really be only temporary and unnecessary emergency buildings, THAT WILL BE CAST INTO THE DISCARD, UNUSED AND OBSOLETE IN ABOUT TWENTY YEARS, WITH A DEAD LOSS OF MILLIONS OF DOLLARS IN TAXES THAT NOT ONE TAXPAYER IN THE COUNTRY CAN AFFORD TO YIELD UP FOR SUCH A WANTON WASTEFUL PROJECT.

Unless the government could afford—and the folly of this is prima facie—to build a veterans' hospital in every town—there will always be the elemental obstacle of transportation to be combated.

Without knowledge of the A. M. A. plan two Congressmen in Southern States far distant from veterans' hospitals introduced bills for use of local hospitals. These men—McClintic of Oklahoma and Rankin of Mississippi—both stated that their bills resulted from requests from veterans themselves.

It has been estimated that 130,000 beds will be needed. Yet for the efficient care of the veterans there are already available in standardized and efficient hospitals almost 319,000 empty beds!

Use of local hospitals affords among other advantages to the man 1. choice of his own physician; 2. immediate treatment; 3. conservation of resources to the government, which after all is the individual citizen, an unfortunate mortal trying now to pay for an already backbreaking bureaucracy that nobody wants and that nobody needs.

After all, in a democracy the government is—or should be—the people. And the "Government," high and mighty though the title may sound, has no other money to call its own except that which you and I and the man across the street can lay our hands upon.

The fifty-three veterans' hospitals now in existence have only about 26,000 beds. But with the 319,000 empty and available beds now in civilian hospitals even the estimated 130,000 more beds needed for veterans will still leave a surplus of about 180,000 in case veteran disability increases by leaps and bounds.

And, in case the civilian hospital accommodations are rejected where will this "government" of you and me, and the man next door,

already facing a national deficit in the billions that we cannot pay, how and where will we get the $300,000,000 to build and the $200,000,000 or $300,000,000 per annum necessary to maintain them? And if we do borrow a little more where no borrowing is to be done what are we going to do? To keep on extending the Veterans' Bureau with indiscriminate free medical care, or by and by when another sort of whim seizes a few politicians, set about junking these expensive institutions that may or may not be paid for?

It has been aptly written by the A. M. A.:

"The psychology of the situation is again simple. A bureau once established begins to expand, to grow and to forestall dissolution. The Veterans' Bureau, if it wishes to continue as a thriving and growing organization, naturally will support plans for extending its hospital facilities and its personnel.

"There are many reasons why the people of the United States and the medical profession must oppose unreasoning expansion of the Veterans' Bureau and why they should consider alternative plans such as that providing cash benefits to disabled veterans. These reasons are so logical and so inherently sound that they must appeal to every thinking person. The continued building of veterans' hospitals and the enlargement of the Veterans' Bureau constitute an insiduous approach to state medicine. The actual needs of veterans will gradually be exceeded by the medical provisions available. Then socialistically and communistically minded demagogues will demand that the state administer care to all individuals as it has attempted to care for veterans. Such a procedure would strike at the fundamental principles of the democracy under which we live and for which our veterans fought. It would impair greatly the progress of medical science; it would destroy interest in medicine as a career. It would lead to the poor type of medical service given to people under similar systems abroad.

"The veteran today must go to a veterans' hospital selected for him by the Veterans' Bureau even though it is some distance from his home. Thus he is removed from his family to become a ward of the state. Government employes, whose primary allegiance must be to the government which employs them rather than to the veteran who is served, examine and diagnose his case. Free choice of physician and responsibility to the patient rather than to any other employer is so fundamental in first rate medical practice that it has been recognized even by governments that are experimenting with state medical care. Government bureaus do not provide for this type of practice.

"It has been suggested that a plan that would insure care for the disabilities of veterans by payment to the veteran of a regular cash benefit during the period of his disability would easily permit free choice of physician and hospitalization at home,—really greater benefits,—and yet far less costly than any other system. Insurance actuaries estimate that cash benefits of this nature could not amount to more than $80,000,000 a year. So even with the cost of administration, control and payment for hospitalization, the total cost would hardly exceed $100,000,000 the first year, and would diminish gradually as veterans grew older. There would be no depreciation, either, of a costly plant.

"Many leaders of the American Legion see the wisdom of this plan. Many individual posts have gone on record as favoring the system of cash benefits. American soldiers fought and served, inspired by the ideal of maintaining the great American democracy. Our system of government gives the individual free choice of his method of life; it gives him a voice in selecting his government and the laws by which he will be governed. The present plan of hospitalization for the disabled and the possible extension of this hospitalization to the care of all veterans, to the families of veterans and, indeed, to other persons in the government service is a threat at the very foundation of our government and a triumph for socialistic and communistic leaders.

"The resolution adopted by the House of Delegates deserves the support of the entire medical profession whether in or out of the American Legion. Those members who are also members of the American Legion may help both the veterans and the profession by their help in disseminating a proper understanding of the situation. Those who have allowed their membership in the American Legion to lapse and those who did not join the American Legion may well interest themselves in the veterans' organization for the

same reason," declares the Journal of the A. M. A.

"Records of the Veterans' Administration show that the government was providing hospitalization for 39,623 ex-service men on July 31, as compared with 30,677 on July 31, 1930, an increase of 8,946, or about 30 per cent. Nearly half of the number receiving care are psychiatric patients, about one fifth are tuberculosis and the remainder suffer from a variety of general diseases. On July 31, 1931, there were 3,166 unoccupied beds in all government hospitals as against 2,530 in 1930. Of veterans awaiting hospitalization there were this year 90 with service-connected disabilities and 3,426 with non-service-connected conditions. According to the veterans' administrator, the primary factors determining the number carried on the waiting list are turnover in applications and personal reasons. Delay for personal reasons is primarily due to the fact that hospitalization for minor conditions has been authorized, and veterans may set a date after which they will accept hospitalization. Emergency cases are not carried on the waiting list, it was stated, as hospitalization is authorized in these cases without regard to the type of disability," says an authority.

A resolution opposing continuance or enlargement of the present legislative program of the federal government in the construction of veterans' hospitals was sent to members of Congress by the American Protestant Hospital Association through its secretary, Frank C. English, D. D., Cincinnati. The protest points out that many general hospitals are burdened financially and need all local revenue. The association feels, therefore, that the plan to send veterans to distant cities and pay for their care, while their families are frequently thrown on local hospitals as charity patients, works a hardship on such hospitals, especially when half of their beds are often vacant. The trustees of the association believe that the government should provide hospitals for the permanently disabled and the tuberculous, cancerous and mental patients, but should consider carefully the question of having those who are temporarily sick and injured treated in civilian hospitals as more economical. It is believed that this can be done at a cost to the government less than what it costs to build and operate veterans' hospitals.

To state the facts bluntly, the Veteran Hospital plan bids fair to be the precursor of so-called "state medicine," a system repugnant to all right thinking Americans, whether physicians or laymen. The government now with 40,000 beds available for veterans, proposes to build additional hospitals providing for 130,000 more beds, at the cost of $300,000,000, despite the fact that at the present time there are approximately 319,000 empty beds in the 8,000 civilian hospitals. For the government to persist in planning new beds while there is already an oversupply on hand is a tragedy and a crime against the already overburdened tax payer, who pays and pays. Let it be repeated the proposed veterans' hospital building plan is both an unnecessary burden on the tax payer and a crime against the medical profession. With government hospital plants totaling 150,000 beds without doubt there will be built up a more or less political personnel whose sole interest will be to hold onto their jobs by keeping all these beds filled. When the veterans are all dead whom will these bureaucrats bring in to fill these 150,000 beds? Will the Government donate these hospitals for civilian use? Not if the job holders can help it! Rather, by their plan one after another of various groups of the civilian population will be granted hospitalization in government hospitals, at government expense, will be treated by government doctors working on salary, and will be withdrawn from the possible clientele of the already harassed private physician; the whole scheme will build up a bureaucracy that knows no master. And the expense will be paid by more taxes—if the taxpayers hold out.

To head off this campaign requires education of both the profession and of the public. Both should be shown the dire results of such an uneconomic scheme. The veterans themselves should be brought to realize that a vastly better service is available to them in civilian hospitals. In many cases, in fact, a better service can be rendered them in the civilian hospitals in their home towns. A campaign of enlightment should go out to the veterans, to their friends and to the tax-paying public. We should get in touch with our representatives in Washington who should be made familiar with the true situation in the interest of the taxpayer, the welfare of the veterans themselves, and if the truth be confessed in the very survival of democracy itself.

THE ANNUAL MEETING

Plans for the 1932 Annual Meeting of the Illinois State Medical Society, to be held in Springfield May 17, 18, 19, 1932, are well under way, and the prospects for a successful meeting are very encouraging. The Sangamon County Medical Society, the Host Society, is doing everything possible along the line of preliminary arrangements, to make this meeting one to be long remembered.

Each of the five Scientific Sections of the Society is arranging an attractive program for their respective sections. The Annual Secretaries' Conference will be held at 10:00 A. M., Tuesday, May 17, and the officers of the conference are arranging a program that will be of interest to not only the officers of component societies, but also to the membership as a whole. This important session should have a better attendance this year than ever before.

At noon on the first day of the meeting a big luncheon meeting is being arranged, to be attended by members of the Society and members of the American Legion. Dr. H. H. Shoulders, of Nashville, Tennessee, author of the "Shoulders' Resolution," Col. Hugh Scott, Superintendent of Hines Hospital, and Mr. Edward A. Hayes, of Decatur, will be the speakers at this interesting luncheon meeting. This meeting should be well attended by both physicians and Legionnaires.

On Tuesday afternoon, beginning at 1:00 o'clock, the Sections on Medicine, Surgery, Public Health and Hygiene, and Radiology will have a joint session with guest speakers on the entire program. Each will speak on some subject pertaining to their specialty, of general interest to all practitioners.

The general opening meeting of the Society will be held on Tuesday evening, May 17, and the principal speaker will be Dr. Edward H. Cary, of Dallas, President of the American Medical Association. Dr. Cary will give an address of interest to the medical profession and also to the laity, as the meeting is open to the public.

The President's Dinner will be held on Wednesday evening and this will be one of the important functions held during the annual meeting. It is hoped that every member present will attend the President's Dinner.

The House of Delegates will meet on Tuesday afternoon at 3:00 o'clock and on Thursday morning at 8:30. Every component society should elect delegates who will attend these sessions, and should ask the delegates to give a report to their respective societies, after the annual meeting. The House of Delegates is the legislative body of the Illinois State Medical Society and every component society, regardless of its membership, is entitled to representation and should insist that its delegates actually participate in the deliberations of the House at each session.

Springfield, geographically, is the ideal place for an annual meeting, and is easily reached from all parts of the state. Adequate hotel service for all is insured and for the first time in several years every section will meet in the same building. The commercial and scientific exhibits will also be shown in this same building and from present indications they will be well worth the time of everyone at the meeting to give them a most careful consideration.

The annual meeting is the members' own meeting and every member of the Society should begin to plan for the big event.

VETERANS' SERVICE COMMITTEE CONFERENCE AT STATE MEETING

On the first day of the Annual Meeting, Tuesday, May 17, there will be a luncheon at the Abraham Lincoln Hotel at 12:00 noon for physicians who served in the O. N. or M. C.

This meeting will be addressed by Dr. H. H. Shoulders of Tennessee, Col. Hugh Scott, Manager of Hines Hospital, and Edward Hayes, Past State commander of the American Legion.

It is hoped that special attention will be given to attending this luncheon by all representatives of the component societies on this committee which was formerly known as the Contact Committee with the American Legion.

There will be no more important meeting at Springfield than this one considering veterans' welfare and its relation to organized medicine.

Thomas P. Foley, Chairman.
John S. Nagel.
Charles C. Center.
G. Norbury.
T. B. Williamson.

THINKING MINDS STAND APPALLED AS TO THE DANGERS OF BUREAUCRATIC CONTROL AND GOVERNMENT DICTATION NOT ONLY TO THE PRACTICE OF MEDICINE BUT AS TO THE STABILITY OF THE ENTIRE GENERAL ECONOMIC SYSTEM

For years we have been warning against bureaucratic control and government dictation of the practice of medicine.

For years, too, we have prophesied that once medicine was thus devitalized and desecrated that the same malignity would direct itself towards other professions and towards trades and commerce.

This prognostication is now justified. Throughout the nation, thinking minds stand appalled,—now that awakening is here,—as to the dangers of this bureaucratic control, and government dictation not only as to the future of medicine but where the stability of the entire general economic system is concerned.

Insidious as was the beginning of this deluge of statutes for statutes' sake there is no longer any subtlety in the manner in which meaningless, unnecessary, hampering, un-American laws are saddled on the backs and thrust down the throats of a sadly beridden nation.

In the wake of this stifling almost impenetrable blanket of over-legislation trails an equally murderous burden of taxation. The entire machinery of this super-legislation spells woe, waste and weighty burdens.

Civilization is being outlawed into an outlaw. No human system of economics and no human wage earner can stand the burden. All the lessons history teaches of the fall and overthrow of governments through unjust taxation and burdensome laws are being cast into the discard by the moronic trend for the pitiless despotism of a bureaucracy. Washington has run wild on the subject of paternalism. Instead of a country of self-respecting achievement we are on the way, —if we survive at all,—to becoming nothing but a huge soup kitchen and a mockery both to the two greatest of human documents—the Declaration of Independence and the Constitution of the United States.

Canny indeed were those conspirators who hit upon the bludgeoning scheme of making the medical profession the cat's-paw for the infantile beginnings of this bureaucratic regime.

Again we must call attention to the fact that because United States citizens have too many laws it follows there is too little respect for any law. Daily this situation grows worse.

From standard democracy to democracy standardized is the country's drift. Today's American finds himself hedged about by more prohibitions than were Europeans under pre-war monarchies, and carrying a heavier levy of useless taxation.

A halt must be called to socialistic legislative tendencies, and monarchical taxation for bureaucratic support. Bureaucratic government with over-centralization at Washington is in process of installation. In the United States of America the republic is being ousted by a progressive bureaucracy. This burden of decadent and dying Europe, from which the founding patriots fled, is being shifted, through the leverage of paternalistic legislation at a high tax rate, upon a trusting and hitherto free people. Statute books of the land betray and defy the Constitution of the United States. A mass of expensive, interfering, useless laws make personal acts of daily life a question for public legislation and at a cost almost beyond reckoning. Through fatuous law-making the crime against liberty and the constitution is committed continually. From the lawmakers restitution must come. That United States citizen who can find for the country the trail away from this menacing, multitudinous bureaucracy and its taxes will be the Abraham Lincoln of the Twentieth Century.

Paternalistic control has extended into the farthest walks of daily life, educational, commercial and professional. Statistics and comments made by men and commissions, widely diverse in every other economic viewpoint, agree upon this menace.

Setting aside the overwhelming taxes that are unsurpassed in national history, and of which the greater portion is being expended in paying salaries to government employes for enforcing handicapping legislation, it is alarming and educative to note that:

1. Even so far back as 1923 the National Budget Committee set forth the facts that:

(a) "During the past year Congress and the forty-eight State Legislatures enacted 4,000 new bills. Also more than 200,000 new laws and ordinances were written on the statute books in

the various political subdivisions of the United States, making a grand total of more than 2,000,000 laws and regulations. To record the interpretation of these laws by courts of last resort, there is an annual requirement of 650 large volumes. This figure does not take into account the much larger number of volumes required for the rulings of court of intermediary and lower jurisdiction.

(b) "If it were possible for a man to read one new law each minute—for instance, one like the federal income tax law—and if a man spent eight hours each day at his task, including Sundays and holidays, the end of the year would find about 25,000 laws as yet unread.

This condition of continuous embargo, of universal prohibition takes us out of our proud estate of democracy and self-respect and makes us a servile people. Nowhere in history is it of record that a free people ever before renounced voluntarily that liberty for which its heroes had died to become serfs of a legislative machine, and pawns of this lawmaking robot that produces laws because it cannot do anything else. These laws that cost the taxpayer so much to be produced cannot be enforced because hundreds of thousands of them are not even known. Their only public contact is the tax that supports them. The cost of *government* has become unbearable through this legislative robot, its production and its productions. Far too many functions of local and of state governments are controlled by hidden bureaus in Washington. Far more power is exercised in these marble sarcophagi by unknown experts, *politically controlled appointees of whispering propaganda, than by the courts themselves.* And thus evil grows like weeds of the jungle.

(c) With many vociferous factions which exist in our midst there is a settled conviction that:

1. All evils yield to legislation;
2. That legislation works automatically.

(d) Expenditures arising out of wars causes enormous waste in officialism, due to persistent growth of bureaucratic control; increase of the personnel of departments, and of commissions and of boards, and of bureaus, and of every other agency ever used or abused by a pternalistic regime. With the "war job" politician the war is still being waged because his job depends on it, and a new war is in the making.

(e) In the United States the cost of government has become unbearable. The situation parallels pre-revolution France. Already we see "handwriting on the wall."

(f) Continuation of existing circumstances is leading to conditions similar to those that brought about the French Revolution.

(g) The Federal Government tried to regulate everything from the setting of a hen to the running of a railroad. A few years ago you could milk a cow without a federal inspector at your heels. The cost of this regulation has arisen from $232,000,000 in 1916 to $1,115,000,000 in 1922.

Though the ratio has increased instead of diminishing.

2. The National Industrial Conference Board stated Sept. 30, 1923, that:

(a) One person out of every twelve over the age of sixteen who is gainfully employed in the United States is on the public payroll.

(b) As a result the taxpayers foot a yearly salary bill of nearly four billions of dollars.

(c) Exclusive of pensioners there are 2,700,000 public servants on the payroll of national, state and municipal government. Annually these public servants receive three and one-half billion dollars in pay, and this income of these public servants is exempt from income tax.

(d) Pensioners and other inactive beneficiaries of the government number 670,000 persons. Annually they receive about three hundred and twenty million dollars. The public payroll carries, all told, about 3,400,000 men and women.

Contrast these figures with those of former years. Some time before the Civil War, one person in every thousand worked for the government —either city, county, state or national. During the administration of the late President Cleveland this ratio had risen to one person out of every hundred. Later, at the close of the war, the ratio was nearer one out of every twenty. Now it is about one out of every twelve. On this scale when 1940 comes every citizen in the country will be a government employe. At this rate there will be nothing left.

Many thousands of persons are paid in part by the Federal Government, but are not carried on its official payrolls, such for example, as county agents, employed under the Smith-Lever Act. The expansion of Federal autocracy was formerly hindered by the limits of taxation, but these have been removed from Congress by the

amendment to the Constitution to levy income taxes. Income tax makes it possible for Congress to raise practically any amount. While a few men seemingly carry this burden it is in reality passed on by them to the general public.

Further food for thought may be gleaned from discovering something about the juggernautal machine that deprives the American citizen of his constitutional liberties and places upon the shoulders of long-suffering taxpayers a four billion dollar payroll for the support of administrators of intermeddling legislation of paternalistic scope, and exempt from income tax.

In this connection the New York State Judiciary Convention reported in 1922:

(a) "In the United States there is everywhere being developed at enormous cost, in the most intensive fashion, a multitudinous bureaucracy with autocratic powers and arbitrary discretion, and a vast system of complicated and often conflicting administrative jurisdictions in relation to property and business and personal conduct, which reach and affect almost every individual, and most of which only a few years ago would have been regarded as of strictly personal concern and not to be tolerated by a free people.

(b) "Extensive legislation, executive and judicial powers are being vested and combined in administrative bodies in distinct and reckless disregard of the sound principles of the separation of governmental powers which was deemed so essential to the due protection of individual rights by the wise founders of our republican form of government.

(c) "Even controverted questions of law and fact, heretofore regarded as fundamentally and exclusively for judicial determination are being entrusted to bureaucratic discretion; and for orderly judicial procedure as known to our fathers, and the competent and impartial interpretation of the laws by the learned judges and juries—arbitrary methods, and untrained judgment are being constantly substituted."

Dr. Nicholas Murray Butler, president of Columbia University, in speaking against the tendency to increasing centralization and the proposition to establish a cabinet department of education, said:

(a) "A widespread illusion as to education is that the more elaborate, the more complicated and the more costly the machinery of school organizations, the better will be the school. The reverse is the fact. Standardization, government-made uniformity, and bureaucratic regulation are not the allies of education but its mortal enemies.

(b) "In this supposedly individualistic nation, the growth of bureaucracy and unnecessary governmental machinery is beyond measure alarming."

"I have given much thought to the question of Federal subsidies to state governments," says Calvin Coolidge. "The Federal appropriations for such subsidies cover a wide field. They afford ample precedent for unlimited expansion.

"I say to you, however, that my financial program as chief executive did not contemplate expansion of these subsidies. My policy and ideas in this matter are not predicated alone on the drain which these subsidies make on the national treasury. This of itself is sufficient cause for concern. But I am fearful that this broadening of the field of government activities is detrimental both to the Federal Government and to the State Governments.

"Efficiency of Federal operations is impaired as their scope is unduly enlarged. Efficiency of the State Governments is impaired as they relinquish and turn over to the Federal Government responsibilities which are rightly theirs."

George H. Moses of New Hampshire may be quoted in his statements that:

(a) "Paternalism runs riot in our legislatures today. Americans of seventy years ago would stand aghast if they knew how many activities which properly belong to the individual or the family, are now taken over by the government.

(b) "When governments undertake projects that are nothing but disguised socialism, laws of a very odd and curious nature will be found necessary."

One trouble it may be remarked in passing is that many persons confuse the term "paternalistic" and "paternal government" with something very kind, very generous, very sentimental, and quite magically provisional for all the ills and ails of life.

"The Burbanks of politics have grafted strange stalks upon the body of our statutes and have created a hybrid without pride of ancestry or hope of posterity. This used to be the land of the free. Now it is the region of the regulated. As it is now, the influence of the government is prenatal through the maternity bill and

postmortem through the inheritance act. It controls us before we are born and after we are dead," said Senator Moses again.

Henry L. Shattuck, chairman of the Ways and Means Committee of the Massachusetts House of Representatives, has said:

(a) "The ultimate goal of present tendencies in federal legislation is bureaucracy of the worst sort.

(b) "General welfare" is a broad term. It covers every field of activity. Should the construction relied upon by the advocates of such legislation be adopted, Congress would wield supreme power. The very existence of the states would be placed in jeopardy. Local self-government would be at an end. Bureaucracy would be in the saddle.

(c) "Every activity of our lives would be regulated from Washington. We would soon be in the condition of France where every detail of government is regulated from Paris, and which in treatises on government is cited as a horrible example of bureaucracy gone mad. By reason of the immense size of our country and the great diversity of climate, needs and conditions, the evils of bureaucracy would be far greater."

Former Gov. W. L. Harding of Iowa has said:

"In my opinion the best government is the one that governs least. We must get back to governmental conditions as they existed before the war. We must localize government. The Federal Government has its functions and they are well defined. The same is true of our local governments. During the war period there was great encroachment on the part of the Federal Government on the prerogatives of our local institutions."

The late Senator Albert J. Beveridge of Indiana protested:

(a) "Americans are required by law to do more things and prohibited by law from doing more things than had been required or prohibited in autocratic Europe.

(b) "Nearly all these repressive, oppressive, autocratic laws have been forced by selfish minorities of whom our lawmakers and administrators are in terror.

(c) "This country is smothered by statutes. The expense of government has swollen to dropsical bulk. There is today a government employe for every eleven Americans over 16 years of age. The bureaucratic mechanism is so cumbersome and intricate that no one understands it, and many superfluous laws are of a character to breed hypocrisy and furtive nullification.

(d) "The needs of the day are fewer laws, better enforced; less government, better administered, and more liberty, better ordered," also wrote Beveridge.

"Laws have become so numerous and complicated that lawyers and even the courts are forced to wander through a maze seeking some way out to light and sanity. The machinery set up by this mass of unwieldy legislation operates through swarms of government agents disciplining industry and trade and eating up the substance of the people. The administration of government has become so intricate and involved through bureaus, boards and commissions, hives of bureaucracy, that nobody can understand its workings."

The *Congressional Record,* under date of Feb. 10, 1921, cites Senator William H. King:

(a) "The struggle is now on between the consolidated and powerful Federal Government, dominated by bureaucratic forces, and the rights of the people as individuals as the sources of power and authority—and the rights of local communities and of the states themselves. And the voices that should be strong for local self-government, for personal liberty, for freedom, and for those principles and policies that make a strong and vigorous democratic people, seem to be silent while the strident cries of the centralized forces in the land, either frighten the people into submissiveness or win them to the acceptance of dangerous and destructive policies.

(b) "What we need now is a leader who will arouse the people to the necessity for putting teeth in the laws of the Federal Government and of reviving the spirit of personal independence and local self-government which inspired our fathers in the days of the revolution.

(c) *"I wish a crusade would be inaugurated in all parts of the land against the accursed spirit of bureaucracy and paternalism.*

(d) "Congress is becoming so impotent that many believe we sit in this chamber merely to O. K. bills prepared by government officials. It has been charged that we lack courage to resist those demands. There is much to support the charge."

BANQUET FOR MEDICAL LEGION MEMBERS

A banquet for physicians who are members of the American Legion has been arranged to take place in Springfield at 12 o'clock noon on Tuesday, May 17th, the first day of the annual meeting of the Illinois State Medical Society. Immediately following the banquet the meeting will be opened to the friends of the American Legion who are invited to hear three splendid addresses by

1. Edward Hayes, Decatur, Ill., Chairman of the National Rehabilitation Committee of the American Legion.

2. Col. Hugh Scott, M. D., Walter Hines Hospital, Chicago.

3. Dr. Harrison H. Shoulders, Nashville, Tenn.

This is the first time that a meeting of the character has ever been planned in connection with State Medical Society activities. Dr. R. D. Dugan, Springfield, is chairman of the American Legion Committee and has arranged the program. He will announce further details in the next issue of the JOURNAL.

GOLF TOURNAMENT AT SPRINGFIELD

There will be a women's golf tournament open to any lady who is a guest of the Illinois Medical Society at the Springfield meeting. It will be held at the Grand View Country Club at 10 A. M. Monday, May 16. Those desiring to play will please send their names to Dr. Richard F. Herndon, Myers Bldg., Springfield, Ill., as soon as possible. An effort will be made to furnish transportation to and from the club grounds.

MAKE HOTEL RESERVATIONS EARLY—ANNUAL MEETING

Springfield is pleasurably awaiting the meeting of the Illinois Medical Society on May 17, 18, 19, 1932. Springfield is a city of national historical interest, which every Illinoisan and American should give at least one appreciative visit, and May is a delightful month in which to do this.

Hotel reservations should be made as soon as possible to avoid a last minute rush. Rooms can be had at varying prices, from the de luxe accommodations of the larger hotels, to those of the smaller, quieter, and less expensive hostelries. There is ample space for all and every purse can be suited.

The Committee on Hotel Accommodations will gladly co-operate in any way possible to make your Medical Week a success and pleasure.

It is keenly hoped that members will bring their wives and families along. The women of the Auxiliary of the Medical Society are planning a hearty welcome for the ladies and will exert themselves in every way to make this visit one to be remembered.

The Sangamon County Medical Society and their Ladies' Auxiliary also join in sending an urgent invitation to you, Dr. and Mrs. Physician, to come to Springfield for this Medical Meeting, on May 17, 18, 19, 1932, to visit us and to visit our town, the home of Abraham Lincoln, and the capital of your State.

Send your reservations direct to the hotels.

HOTEL RATES

Abraham Lincoln Hotel.....	150 rooms	$3.00 to $7.00
St. Nicholas Hotel.....	350 rooms	2.00 to 6.00
New Leland Hotel.....	150 rooms	1.75 to 7.00
Illinois Hotel	60 rooms	1.25 to 2.50

There are other hotels, which are smaller but comfortable.

GOLF TOURNAMENT AT ANNUAL MEETING

"There will be a golf tournament at the annual meeting for interested doctors on Tuesday morning, May 17, 1932. We would like to have every county represented in the tournament. County Secretaries or individual golfers may write to Dr. F. P. Cowdin, Chairman, Golf Tournament Committee, 320½ South Fifth St., Springfield."

SOCIAL INSURANCE*

MOST GOVERNMENTS ARE INEFFICIENT OF CORRUPT—SOME ARE BOTH

One of the very first questions that naturally arises is: Have any of our governmental agencies so conducted themselves in the past as to make it reasonably safe for us to entrust so stupendous a function as universal social insurance to any branch or department? I maintain that most of our local as well as state governments are inefficient or corrupt, and some are both.

Let any one who doubts the correctness of this statement spend a little time to look around with

*Third installment of Dr. Edward H. Ochsner's articles on Medical Economics.

a critical eye and observe how most local governments, the various departments of the state in which he lives, and the departments of the federal government are conducted, and I am convinced that he will find more inefficiency than he has ever dreamed could exist. If he does not personally know of corruption and inefficiency in government, let him but scan one single daily newspaper regularly for a month in order to be convinced. And what else can one expect who is at all familiar with politics as it has been played and managed in these United States in the year 1931—the manner in which most men secure their nominations and later their elections, and to whom they are beholden when they take office?

We have all seen the statement repeatedly in the public press, but have never seen it successfully refuted, that in many of the political subdivisions of our country only sixty percent of the taxes collected are effectively spent, the remainder being frittered away, wasted or stolen. This inefficiency and corruption is due to many causes of which some of the more important are:

The fact that so far no formula has been discovered according to which the most efficient, honest, industrious and worthy members of the community can be secured for public office. Nor has there been any method devised whereby spoils politics, favoritism, pull, nepotism, waste and graft can be eliminated with even a reasonable degree of certainty. The individual who could solve these two problems would not only be the greatest benefactor of the human race but the wisest man the world has so far produced. Plato tried to solve this problem twenty-three centuries ago when he wrote his Republic. For a time he actually thought he had found a solution. He prevailed upon the King of Syracuse to adopt his plan and put it into operation. The King tried it for a while, tired of it and sold Plato into slavery. Some good friends ransomed him. After that he was not so sure that his scheme would work in practice. Things are not much different today than they were in the time of Plato. Only worse. Worse because of the increase in population resulting in larger governmental units, the enormous increase in the number of those exercising the franchise, the increase in the percentage number of ignorant voters and the ever increasing astuteness and finesse of our practical politicians.

Inefficiency and corruption is so common that we have become callous to it. We are annoyed by it, we grumble and complain mildly about it, we pay our ever mounting taxes if we have anything with which to pay and 'let it go at that.' It almost seems as though we humans had adopted David Harum's dog philosophy and were applying it to ourselves. He said:

"A certain amount of fleas is good for a dog, it keeps him from brooding on being a dog."

The best illustration of governmental muddling in general is to be found in the mess most governments of the world have made of themselves during the past twenty years. As examples, we need but call attention to the virtual bankruptcy of Germany and of Austria, the maladministration in Russia, the revolutions in Spain, China, Central and South America, the dictatorships in Poland and Italy and when we come nearer home, the general lawlessness in the United States with its murders and kidnapping for ransom; conditions in the city of New York as disclosed by the Seabury Investigation; the virtual bankruptcy of Chicago and Philadelphia, and the near bankruptcy of many other governmental units.

Let us study conditions in our own country a little more in detail in order to determine whether it would be wise or even safe to entrust the federal, state and local government or any one of them, with supervision over the private lives of its citizens. (This phase of the problem will be taken up more in detail in the future installments).

THE MEDICAL PROFESSION HAS CAUGHT UP WITH DOCTOR BEVAN

The Journal of the A. M. A. February 13, 1932, comments editorially on Doctor Bevan's latest attempt at malignment of the medical profession. We quote:

OPINIONS ON PRESCRIPTIONS OF ALCOHOL

"Hearings before the Senate committee that is concerned with the bill introduced by Senator Bingham to modify the prohibition regulations have brought to light some astounding testimony. Among those who have participated in giving evidence was a former president of the American Medical Association—Dr. Arthur Dean Bevan. It is unfortunate that physicians should testify beyond their scientific opinions regarding the effects of alcoholic liquors on the

human body. Dr. Bevan seems to have ventured positive statements on the social effects of alcohol and on the ethical aspects of medical prescribing. In proffering his opinions, Dr. Bevan demonstrated an extraordinary lack of confidence in his professional brethren. He moralized on the terrific temptation confronting the profession through the fact that many physicians have incomes of approximately $2,500 a year and, in the right to prescribe, have seen, in his opinion, an opportunity to make $1,200 extra. Dr. Bevan is apparently familiar with the cost of whisky per case at corner stores; he asserted that a considerable number of physicians were providing the signed prescriptions that permitted druggists and bootleggers to sell this liquor by the case. The Journal wishes to protest editorially against this expression of opinion by one of the past presidents of the Association. If Dr. Bevan has actual evidence that any physician is selling his prescriptions *en masse* in order to permit druggists and bootleggers to dispose of whisky in case lots, he, and all of those who possess the information, are equally guilty with those who are violating the law in permitting the violation. If he has not the evidence, he is certainly without warrant in making such a statement to a Senate committee; in any event he is not justified in indicting the entire profession for the misdemeanors of a few. His statement reflects great discredit on a profession whose ideals are certainly as high as those of any other professional group in the country. As a leader of that profession for one year, he should be more familiar than he seems to be with its ethical standards and with the extent to which physicians actually are guided by a proper appreciation of moral values."

Dr. Bevan Refused Space in A. M. A. Journal to Discuss His Liquor Charges

According to the Chicago Tribune, February 20, 1932, Dr. Arthur Dean Bevan was refused space in the journal of the association for a letter explaining his recent testimony before a senate committee in Washington that 90 per cent of doctors' prescriptions for whisky are bootleg prescriptions.

Dr. Bevan's testimony was called an "insult to the medical profession" and an editorial in the journal reproved him for his utterances.

Thereupon, he wrote a statement for the journal, to which he received a reply as follows:

"The board of trustees has given careful consideration to your letter and to the transcript of the testimony you presented in Washington. In your letter you seem merely to reiterate the opinions expressed in the testimony which received wide publicity in the press.

"The board of trustees, therefore, does not think it desirable to publish your letter in the journal since neither the letter nor the testimony was supported by any evidence other than your own opinions, and certainly they are not substantiated by any evidence available to the American Medical Association."

Chicago Retail Druggists' Association Ask Doctor Bevan to Retract Bootleg Charges

A news item in the Chicago Tribune, February 13, 1932, says:

"Daniel P. Seibert, president of the Chicago Retail Druggists' Association, yesterday demanded that Dr. Arthur Dean Bevan, Chicago surgeon and former president of the American Medical Association, publicly retract his remark before a senate committee that Chicago druggists sell liquor illegally.

"The demand followed a meeting of the executive board of the druggists' association. Mr. Seibert asked why, if Dr. Bevan was in possession of facts relative to the violation of the Volstead act, he does not reveal the names of men individually instead of trying to incriminate the whole medical and pharmaceutical profession. 'I challenge the statement,' said President Seibert, 'as representative of 2,000 pharmacists in this city.'"

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK PROTESTS DR. BEVAN'S STATEMENTS

New York, March 1, 1932.

Charles H. Phifer, Secretary,
Chicago Medical Society,
185 North Wabash Avenue,
Chicago, Illinois.

Dear Doctor Phifer:

It gives me pleasure to comply with your request for the resolution regarding Dr. Bevan. It was adopted by this Society and reads as follows:

Whereas, The daily press has widely quoted the testimony of Dr. A. D. Bevan before the Senate manufactures subcommittee on the Bingham beer bill where Dr. Bevan asserted that 90 per

cent of the prescriptions for whiskey are for its use as a beverage; that the sale of whiskey for beverage use is made possible by the "bootlegging doctor"; that (by imputation) a large percentage of physicians increase their yearly income $1,200 through the sale of their whiskey prescriptions; and

WHEREAS, No statistics are available upon which such statements as those made by Dr. Bevan can be based; and

WHEREAS, The high position of Dr. Bevan as a leader of organized medicine gives weight to his opinions, regardless as to whether they are his conjectures or are based on fact; and

WHEREAS, Such statements tend to destroy the confidence and faith of the people in our profession; THEREFORE, BE IT

Resolved, That the Medical Society of the County of New York hereby registers its disbelief and disapproval of Dr. Bevan's statements and that a copy of this resolution be sent to Dr. Bevan, the Journal, the American Medical Association, the Cook County Medical Society, the chairman of the Senate subcommittee, and the daily press.

D. J. Dougherty,
Secretary and Director.

LIMITED PRACTITIONER NOT PRIVILEGED TO PRACTICE IN A HOSPITAL RESTRICTED IN ITS USE FOR THE TREATMENT OF CONTAGIOUS DISEASES

The Attorney General in a recent opinion relative to the Municipal Contagious Hospital in Decatur, Illinois, says:

STATE OF ILLINOIS
LAW DEPARTMENT
SPRINGFIELD

Oscar E. Carlstrom,
Attorney General.

FILE NO. 3772 February 3, 1932.

HEALTH:
Practice of Medical
Practitioners in
Hospitals.

Hon. Andy Hall, Director,
Department of Public Health,
SPRINGFIELD, ILLINOIS.

Dear Sir:

I have your letter of January 23rd, in which you say some years ago a hospital for contagious disease was erected in the City of Decatur at the expense and to be maintained by the taxpayers of that city, but that owing to a controversy between the physicians of that city and the board of trustees of the hospital, the hospital is not being used for any purpose. You say that you have been informed that a number of cases of communicable diseases now exist in the City of Decatur, which should be hospitalized in the said hospital. In your letter you say:

"In view of the fact that the hospital constructed in the City of Decatur at the cost of the taxpayers of that city was restricted in its use specifically and solely for the treatment of contagious diseases such as smallpox, diphtheria, measles, scarlet fever, meningitis, infantile paralysis and other communicable diseases, and for no other purpose, would in your opinion physicians holding a limited license from the State of Illinois to treat human ailments without the use of drugs or medicine and without operative surgery, such as osteopaths or chiropractors, have the right to participate in the use of such hospital and its services, notwithstanding such hospital was erected and is being maintained by taxation?"

Under date of December 18, 1930, I rendered you an opinion, File No. 2973, in reply to your letter of December 11, 1930 addressed to me. In your letter of that date you said:

"I am now in receipt of a letter from the Secretary of the Board of Directors of that hospital wanting to know whether their Board is authorized to fix a standard of qualifications for those who practice in the City Contagious Hospital. They would like to secure your opinion covering this and they 'also desire to inquire if the Board of Directors knowingly permits one not qualified or licensed by the state to carry out the recognized treatment of contagious diseases, Diphtheria for instance, might they be held responsible for negligence.'"

In this opinion I held that the Board of Directors of the said hospital had no authority to pass any rule or regulation which would prevent all legal practitioners from having equal privileges and treating patients in said hospital. This conclusion was based upon the provisions of section 11 of an act entitled, "An Act to revise

the laws in relation to establishing and maintaining public hospitals in cities of less than one hundred thousand inhabitants," the same being paragraph 175 of chapter 23, Smith-Hurd's Revised Statutes, 1931. This section provided:

"All physicians who are recognized as legal practitioners by the State Board of Health of Illinois shall have equal privileges in treating patients in said hospital."

In construing the phrase "equal privileges," it must be remembered the legislature, by the passage of the Medical Practice act of 1923, divided physicians into two classes; one class that practices medicine in all its branches, and the other class that treats human ailments without the use of drugs or medicine and without operative surgery. In view of this classification, it cannot be presumed that the legislature intended to accord to the class of practitioners treating human ailments without the use of drugs or medicine and without operative surgery the same right to practice as that class of practitioners practicing medicine in all its branches, if the treatment for a particular disease required the use of medicine or drugs or operative surgery. Equal privileges, as used in the aforesaid section, in my opinion, mean equal privileges to practitioners of the same class.

It cannot be questioned but that the treatment of the contagious diseases stated in your letter, namely: smallpox, diphtheria, measles, scarlet fever, meningitis, and infantile paralysis, of necessity from the very nature of the disease, required the use of medicines and drugs and often operative surgery.

The use of medicines and drugs and operative surgery by a limited practitioner is prohibited by the provisions of the Medical Practice act and such practitioner is restricted in his practice to the treatment of human ailments without the use of medicine and drugs and operative surgery.

It is therefore my opinion that a limited practitioner is not privileged to practice in a hospital restricted in its use specifically and solely for the treatment of contagious diseases.

Very truly yours,

(Signed) OSCAR E. CARLSTROM,

MFW:CKN Attorney General.

REPORT OF EDUCATIONAL COMMITTEE

February, 1932

Speakers' Bureau

32—Health talks were scheduled by the Committee.

Women's Clubs
Parent Teacher Associations
High School Assemblies
Hospital Staff
Y. M. C. A.
Public meeting—diphtheria immunization
Sunday school class
Men's Brotherhood of a Church
Public Health Chairmen of district, Illinois Federation of Women's Clubs
Lions Club
Home Bureau
County Teachers' Institute
Illinois Farmers Institute
Chamber of Commerce
Woman's Auxiliary

Comments on these talks:

"A very interesting speech. It was particularly suitable to the type of audience—mothers of children from 6 to 10."

"A very splendid talk. Dr. T. presented his subject in a very interesting way. He gave a very clear idea of the structure of the feet and the care of them. He held the attention of his audience the entire time. A splendid speaker for a high school group."

"The finest talk we have had in our institute."

Scientific Service

24—Scientific papers scheduled for medical societies:

Will-Grundy County—
Lee O. Frech—"Medical Economics."
Edmund Andrews.
C S. Williamson—"The Management of the Commoner Heart Conditions."
Clifford Grulee—"Pneumonia in Infants and Children."
Monmouth Physicians Club—
Harold Swanberg—"Recent Developments in Radiology."
Perry County—
Thomas B. Kelly—"Infections of the Gall Bladder.
J. R. Ballinger—"Malpractice."
Aurora Medical Society—
Edward A. Oliver—"Practical Points in Dermatology."
Paris Hospital Staff—
James T. Case.

Rock Island County—
James T. Gregory.
LaSalle County—
Robert Berghoff—"Syphilis of the Heart."
Arno B. Luckhardt—"Ethylene Anesthesia."
D. Raymond Dwyer—"Hyperthyroidism."
Whiteside County—
M. Herbert Barker—"Nephritis."
Don C. Sutton—"General Survey of Heart Disease."
Kane County—
John A. Wolfer—"Diseases of the Common Duct."
Warren County—
Herman H. Cole—"Surgical Treatment of Tuberculosis."
James H. Hutton.
Jackson County—
John R. Caulk, St. Louis—"Genito-Urinary Diseases."
Randolph County—
Charles S. Skaggs—"Hypertension."
H. A. Cables—"Broncho Pneumonia."
Fulton County—
Harold M. Camp—"Medical Economics."
Charles P. Blair—"Spinal Injuries."
Iroquois County—
Leon Unger—"Recent Advances in Treatment of Asthma and Hay Fever."

The office of the Committee sent out notices to physicians for the meetings of Perry, Randolph and LaSalle Counties. Return postal cards were enclosed.

PRESS SERVICE

911—Total releases for the month of February.

498—Regular Press Service.

27—Papers received monthly health article.

49—Newspapers, re meeting Madison County Medical Society.

53—Newspapers, re meeting Perry County Medical Society.

34—Newspapers, re meeting Randolph County Medical Society.

69—Newspapers, re meeting Warren County Medical Society.

57—Newspapers, re meeting Whiteside County Medical Society.

95—Newspapers, re Cancer meeting, Chicago Medical Society.

27—Community newspapers, re meetings Branch Societies of Chicago Medical Society.

2—Chicago Association Commerce, re meetings Chicago Medical Society.

Special health articles were sent to Joliet and Greenup to arouse interest in diphtheria immunization, smallpox vaccination, etc.

RADIO

42—Radio talks were given from WGN and WJJD; those given during the regular periods were as follows:

Allan H. Ferguson—"Practical Suggestions for the Mother."
Hugo R. Rony—"Obesity and Leanness."
Frank J. Jirka—"Cancer."
Homer W. Humiston—"Cathartic Misuse."
Gilbert H. Marquardt—"Rheumatism."
E. A. Proby—"Complicating Diseases During Pregnancy."
Maximilian Kern—"Goiter."
Joseph Welfeld—"Common Skin Disorders."
Charles J. Drueck—"Constipation."
Robert L. Ladd—"Constipation."
Andrew McNally, Jr.—"Cancer of the Urinary Organs."
B. Barker Beeson—"Cancer of the Skin."
Daniel A. Orth—"How Can I Escape a Cancer Death?"
Arthur F. Abt.—"Child Health."
Robert Blue—"The Eyes as a Factor in Health and Efficiency."
Philip H. Smith—"Postnatal Care."
David L. Schram—"Heart Disease."

MISCELLANEOUS SERVICE

15—Folders of health material compiled and sent out to doctors and club women.

1,068—Clippings received and filed—1,125 were received and filed during the month of January.

Notices mimeographed for the Woman's Auxiliary.

Information as to the chemical composition of a drug, obtained for the Home Economics Extension Service of the University of Illinois.

A special folder of material compiled giving reviews of all articles that refer to medical care and physicians appearing in important lay journals during the year 1931.

Material secured for physicions preparing scientific papers.

Supplied material for the second issue of the Child Health Magazine section of the Sunday Herald and Examiner.

In order to find out if the radio talks were interesting the public, we announced that copies of one talk could be secured upon request. Over one hundred replies were received from all parts of the Middle West.

DON'T FORGET YOUR INCOME TAX RETURNS

Physicians are reminded to file their federal income tax returns without delay. They must be filed not later than March 15.

The Ohio State Medical Journal (February) gives a summary of the law, and discusses the allowable deductions as follows:

"OFFICE RENTALS: If a physician pays rent to another person for office space, he may deduct the amount; if he owns his own home and maintains an office in it, he cannot claim deduction for office rent.

"AUTOMOBILE: The cost of repair and upkeep of an automobile used in professional visits may be deducted. That part of a salary paid to a chauffeur and attributable to time spent in driving his employer on professional calls, may be deducted. Sums spent for taxi hire, carfare, etc., while on professional calls, may be deducted.

"Loss on an automobile used in professional business through depreciation may be deducted. The depreciation which should be deducted annually is figured by dividing the cost price of the machine by the number of years of its usefulness.

"If a physician has one automobile which is used exclusively in professional business he may deduct the full depreciation each year. If the machine is used only partly in professional business, the deductible depreciation should be computed on the basis of the amount of time the car is used for professional purposes.

"If a physician possesses two cars, each of which is used partly in professional business, the deductible depreciation on each car should be computed on the basis of the amount of time each car is used for professional purposes.

"In other words, if an automobile is used only partly for business purposes, depreciation may be deducted only on a proportionate part thereof, the amount of depreciation depending on the amount of time the machine is used in professional business.

"PROFESSIONAL DUES: Dues paid to professional associates to which, in the interest of his profession the physician belongs, are exempt and may be deducted. Travelling expenses incurred in attending medical conventions of organizations of which he is a member are deductible from gross income in determining net income derived from practice. Expenses incurred in taking graduate courses have been held NOT to be deductible.

"ASSISTANTS: Deductions are permitted for the salaries of nurses, laboratory workers, technicians, assistants, stenographers or other clerical workers in offices so long as their duties are connecetd with professional work. Wages paid maids for services rendered in connection with practice are deductible.

"MEDICINE, INSTRUMENTS, SUPPLIES: Medicines used in the office to treat patients, medicine dispensed, bandages, laboratory materials and all other supplies necessary to operate the office may be deducted. Upon surgical instruments, one-fifth of purchase price may be deducted annually for five years under depreciation account. All office fixtures, appliances, etc., used in office or laboratory may be depreciated annually, according to the estimated life of their usefulness.

"GENERAL OFFICE EXPENSE: Cost of telephone, telegrams, etc., used in professional services may be deducted. Expenditures for heat, light, water, etc., are deductible. Office fixtures and furnishings may be depreciated 10 per cent annually. Original cost of medical books may be depreciated 10 per cent annually, since the life of these is usually considered 10 years.

"WHEN TO DEDUCT DEBTS: If the physician's books are kept according to the 'Cash Receipts and Disbursement' system, he may not charge off any unpaid debt because he is then only reporting as gross income those accounts which have proved to be good. Bad accounts have not been reported and are, therefore, not deductible.

"If books are kept on an 'Accrual Basis' (where expense is actually incurred and payable even though not yet paid, or income earned although not yet collected) it is permissible to charge off all debts which have been definitely ascertained to be worthless during the fiscal year covered by the report.

"In the same way, the physician is permitted to claim deduction for all other expenses within the scope of his profession, and the amount of his tax is determined on the net income which remains after these items have been deducted.

"TAXES AND LICENSES: Any tax paid upon materials required in professional work are exempt. All license fees which physicians are required to pay are deductible items. This includes the narcotic tax, automobile license, local occupational taxes, taxes on club dues, etc. The Ohio Gasoline Tax is not deductible.

"LOSSES BY FIRE AND THEFT: Loss of and damage to a physician's equipment by fire, theft, or other cause, not compensable by insurance or otherwise recoverable, may be computed as a business expense, and is deductible, provided evidence of such loss or damage can be produced. Such loss or damage is deductible, however, only to the extent to which it has not been made good by repair and the cost of the repair claimed as a deduction.

"INSURANCE PREMIUMS: Premiums paid for insurance against professional losses are deductible. This includes insurance against damages for alleged malpractice, against liability for injuries by a physician's automobile while in use for professional purposes, and against loss from theft of professional equipment, and damage to or loss of professional equipment by fire or otherwise.

"LEGAL EXPENSE: Expense incurred in the defense of a suit for alleged malpractice is deductible as business expense. However, expenses incurred in the defense of a criminal action are NOT deductible.

"OTHER ALLOWABLE DEDUCTIONS: All taxes paid upon real or personal property, whether the property is used for business or otherwise and all in-

terest paid upon indebtedness (except interest paid to carry nontaxable securities) are deductible. It is permissible to deduct from gross income, contributions when made to charitable, religious, educational and scientific organizations, to an amount not to exceed 15 per cent. of the net income, exclusive of such contributions.

"ITEMS NOT REPORTABLE AS INCOME: Allowances received under the War Risk Insurance act; bequests; damages received in personal action; dividends on stock of federal reserve banks, land banks and intermediate credit banks; dividends from exempted building and loan associations up to $300; dividends from corporate earning accumulated prior to March 1, 1913; gifts, inheritances, insurance proceeds; state court jury fees, state court receivership fees, life insurance proceeds, and stock dividends and rights, are not reportable as income.

"All interest received from obligations of a state or political subdivision thereof; from securities issued under the Farm Loan act; interest on Liberty 3½% Bonds and U. S. Bonds issued prior to September 1, 1917, and interest on the obligations of the possessions of the United States need not be included in the computation of gross income.

"Interest received on Liberty 4% and 4½% Bonds and certain other United States obligations is exempt if the total holdings are not in excess of $5,000. All interest received on United States Treasury notes must be reported. However, all interest received from these sources which is reportable as income, is subject only to surtax."

CORPORATIONS CANNOT PRACTICE MEDICINE IN THE STATE OF WASHINGTON

California and Western Medicine (February, 1932) published an opinion of the Attorney General of the State of Washington in which he outlined the limitations of the rights of corporations, as regards the practice of the professions of medicine, dentistry, and law, we quote:

LIMITATIONS OF CORPORATIONS IN PRACTICE

The Attorney-General of the State of Washington recently rendered to the Director of Licenses of that state an opinion in which he outlined the limitations of the rights of corporations, as regards the practice of the professions of law, medicine, and dentistry.

The opinion of Attorney-General John H. Dunbar is here presented for its general reference value. It is as given below:

Hon. Charles R. Maybury,
Director of Licenses,
Olympia, Washington.

Attention: Mr. George L. Berger, Assistant Director.

Dear Sir:

We have your letter of November 28, which reads in part as follows:

"We would greatly appreciate an opinion as to whether or not it is a violation of the optometry law for an unlicensed person or a corporation to advertise optometry without stating the optometrist's name, although they may have a licensed optometrist in the place of business . . ."

Section 10147, Rev. Comp. Stat. reads as follows:

"Any person shall be deemed to be practicing optometry within the meaning of this act who shall in any manner, except as provided in Section 10159, first, display any sign, circular, advertisement or device purporting or offering to in any manner examine eyes, test eyes, fit glasses, adjust frames or setting himself or herself forth as an optometrist, optician, specialist, optical specialist, eyesight specialist or refractionist, with intent to induce people to patronize himself, herself, or any other person; second, who shall make in any manner a test or examination of the eye or eyes of another to ascertain the refractive, muscular or pathological condition thereof; third, who shall in any manner adapt lenses to the human eye for any purpose either directly or indirectly."

Section 10148, Rev. Comp. Sat., makes it unlawful for any person to practice optometry without a permit.

Section 10150, Rev. Comp. Stat., specifies the requirements and qualifications necessary to entitle a person to a permit.

Section 10159, Rev. Comp. Stat., provides that the act relating to optometry shall not apply to a regularly qualified oculist or physician, nor to persons selling or offering to sell spectacles or eyeglasses as regular merchandise without pretense of adapting them to the eyes of the purchaser.

The word "person" as used in Section 10147 includes corporations. Section 146, Rev. Comp. Stat. It is well settled that a corporation cannot practice any of the learned professions. The rule is well stated in Corpus Juris, Vol. 14A, page 296.

"It is not within the power of a corporation to carry on the business of practicing one of the learned professions, among which may be mentioned specifically law, medicine, or dentistry, or to hire practitioners to carry on such business for it, although practitioners may be hired in some states under local statutes providing that it shall be unlawful for any person to practice a particular profession without first being licensed to do so. This is the established policy of the states generally, independently of statute, as applied to the construction of charters and general statutes governing the organization and powers of business corporations . . ."

Our supreme court in the case of *State ex rel. Lundin* vs. *Merchants Protective Corporation*, 105 Wash. 12, held that a corporation could not practice law in this state. In that case regularly licensed attorneys were employed by the corporation to do the actual legal work. However, the contract with the client was between the corporation and the client and not between the attorney employed by the corporation and the client. The court quotes from 2 R. C. L. 946, as follows on page 17:

"Since, as has been seen, the practice of law is not a

lawful business except for members of the bar who have complied with all the conditions required by statute and the rules of the courts, and as these conditions cannot be performed by a corporation, it follows that the practice of law is not a lawful business for a corporation to engage in. As it cannot practice law directly, it cannot do so indirectly, by employing competent lawyers to practice for it, as that would be an evasion which the law would not tolerate."

A corporation is purely a creature of the statute and can only be formed for such purposes as provided for in the statute. There is no statutory authority for the formation of a corporation to practice any of the learned professions. In our opinion, optometry, while possibly not requiring the same degree of learning as some of the learned professions, for example, medicine and surgery, still it must be classed as a learned profession. A certain degree of learning is required before a license will be issued. A corporation, not having a mind but being an artificial being could not qualify for a license. We therefore must conclude that a corporation cannot practice optometry in this state.

We then come to the question of whether or not a corporation which advertises to furnish optometry service by regularly licensed optometrists is practicing optometry. Under the strict construction of Section 10147, Rev. Comp. Stat., this must be answered in the affirmative since the statute defines practicing to include the display of "any sign, circular, advertisement, or device purporting or offering to in any manner examine eyes, test eyes, fit glasses, adjust frames, or setting himself or herself forth as an optometrist, optician, specialist, optical specialist, eyesight specialist, or refractionist, with intent to induce people to patronize himself, herself, *or any other persons* . . ." However, regardless of this statute, a corporation can only act through its officers and agents. If a corporation could furnish optometry services by employing regularly licensed optometrists, it could just as well perform dental services by employing regularly licensed dentists, and just as well perform medical services by employing regularly licensed physicians and surgeons, and even legal services by employing regular licensed lawyers. The client or patient would be dealing with the corporation and not with the practitioner. The right to practice any of these professions is in the nature of franchises from the state conferred only for merit. No one can practice them until they have complied with certain qualifications which, obviously, a corporation cannot comply with. We believe the same reason would apply to the case of a corporation practicing optometry through agents who were regularly licensed optometrists as was used by our supreme court in the case of a corporation practicing law through regularly licensed lawyers.

The question, then arises whether or not a person not a corporation who is not a licensed optometrist can own, run or manage an office where optometry is practiced by regularly licensed optometrists. In the case of *State* vs. *Brown*, 37 Wash., 97, it was held that the statute which required a license before any person would lawfully own, run or manage a dental office as distinguished from the practice of dentistry was unconstitutional. In that case the owner was not prosecuted for practicing dentistry as defined by the dental law, but was prosecuted because he did not have an owner's, operator's, or manager's license. The court held that the statute requiring such a license was not a reasonable health requirement and, of course, this is the only ground on which the constitutionality of such a statute could be sustained. It therefore reached the conclusion that the statute was unconstitutional. This case was decided in 1905. However, it is very probable that the Supreme Court would follow it and it is possible that under the holding in this case the court would hold that the provisions of Section 10147, *supra*, which make it unlawful for a person who is not a regularly licensed optometrist to advertise for optometry service to be performed by a regularly licensed optometrist, would be unconstitutional. However, the statute has been in force for a number of years and its constitutionality has not been questioned, and we therefore must take the position that it is constitutional until the court holds otherwise.

We therefore conclude that a corporation cannot practice optometry in this state and that the advertising by a corporation for optometry services to be performed by a licensed optometrist employed by the corporation is practicing optometry as defined by the statute. We further advise that an individual may own, manage and operate an office where optometry is practiced by regularly licensed optometrists employed by the owner, but that any advertising done by him in connection with this business does, under the statute, constitute practicing optometry and unless this owner is a regularly licensed optometrist any advertising must be done in the name of the person properly licensed.

Yours respectfully,

JOHN H. DUNBAR,
Attorney-General.

THE AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

The next written examination of the Board will be held in nineteen (19) different cities of the United States and Canada at 2 p. m. on Saturday, March 26, 1932. The general, oral and clinical examination will be held in New Orleans on Tuesday, May 10, 1932, immediately preceding the meeting of the American Medical Association. Reduced railroad fares will be available. For detailed information and application blanks apply to the Secretary, Dr. Paul Titus, 1015 Highland Building, Pittsburgh, Pennsylvania.

LIST OF SPECIALISTS IN ILLINOIS LIMITING THEIR PRACTICE TO OBSTETRICS AND/OR GYNECOLOGY WHO HAVE BEEN CERTIFIED BY THIS BOARD

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Correspondence

ARE HOSPITALS AND THE MEDICAL PROFESSION TO BE INSURED AGAINST LOSS FOR CARING FOR PERSONS INJURED IN AUTOMOBILE ACCIDENTS?

UNITED STATES FIDELITY AND GUARANTY COMPANY

Chicago, Ill., February 26, 1932.

To the Editor:

In the February issue of the ILLINOIS MEDICAL JOURNAL there was an editorial entitled "THE MEDICAL PROFESSION AND HOSPITALS ARE BEING STUNG TO THE TUNE OF $25,000,000 ANNUALLY IN CARING FOR VICTIMS IN AUTOMOBILE ACCIDENTS."

I forwarded this editorial to Dr. J. W. Martin, Medical Director of this Company, who had spoken to me of this condition prior to your publication and expressed himself at that time as being in favor of trying to work out some plan whereby this unfortunate situation could be at least partially overcome.

I have received a communication from him to the effect that he would like me to take this matter up with our local manager and legal department and see what suggestions, if any, they would have to offer.

I would, therefore, appreciate it very much if you would furnish me with an additional copy of this editorial.

Thanking you for your cooperation in this matter, I am

A. T. G. Remmert, M. D.,
Zone Surgeon, 166 W. Van Buren St.

TREATMENT IN INFANCY OF CONGENITAL DISLOCATION OF HIP

Charles H. Jaeger, New York (*Journal A. M. A.*, Jan. 23, 1932), describes his method of treatment in infancy of congenital disclocation of the hip. It consists in principle of four points: 1. By means of a brace the affected limb is held in marked abduction, a position which favors a return of the head into the socket. 2. By means of an adjustable pad a gentle pressure is applied downward and inward on the trochanter. As a result, after four weeks the head is in the desired position, and no additional pressure is needed. 3. No standing or walking is permitted while the brace is worn. 4. The curative brace is used for about four months, when it is replaced by a convalescent splint (extending to the knee only), in which the child is allowed to walk. This is to be used for a reasonable time to permit the elongated and stretched joint structures to contract. This will hold the hip firmly in the socket, which has now been completely formed. This treatment holds good for infants who are treated during the first year of life. It is for these young children alone that this treatment is designed. This method of treatment assures a physiologic reconstruction of the acetabulum. It takes advantage of the great urge of growth in infancy to remodel all the joint structures. The roentgenograms show how quickly and completely this is done. It avoids the dangers of narcoses, manipulations and open operations. The short duration of treatment prevents muscular atrophy. This treatment, begun early and properly carried out, should result in perfect anatomic and functional cures.

RELATIONSHIP OF VITAMIN A TO RESPIRATORY INFECTIONS IN INFANTS

L. H. Barenberg and J. M. Lewis, New York (*Journal A. M. A.*, Jan. 16, 1932), present the results of an investigation to ascertain whether any relationship exists between the vitamin A content of the diet and the occurrence of respiratory infections. The incidence and severity of these infections were determined in four

groups of infants, receiving various quantities of vitamin A in their diets. The first group comprised nineteen infants receiving partly skimmed milk; the second, ninety-four infants receiving pasteurized milk and 20 drops of viosterol; the third, eighty-five infants receiving pasteurized milk and three teaspoonfuls of standardized cod liver oil, and the fourth, six infants receiving pasteurized milk and six teaspoonfuls of cod liver oil. All infants were given orange juice at six weeks, butter at six months and vegetables at eight months of age. Thus the four diets represented a small, a moderate, a large and a maximum amount of vitamin A. These infants were observed in an institution, for periods varying from four to twelve months. Respiratory infections were classified as mild, moderate or severe (purulent otitis media, mastoiditis and pneumonia being classed as severe infections). The results may be summed up in a few words: "No significant difference in incidence or severity of respiratory infections was noted in the four groups of infants. Thus the group which received the largest daily amount of vitamin A, through the addition of cod liver oil, was not protected against respiratory infections to a greater degree than the other groups.

DIPHYLLOBOTHRIUM LATUM: INFESTATION ON EASTERN SEABOARD

Twenty-one cases of infestation with Diphyllobothrium latum are reported by Milton Plotz, Brooklyn (*Journal A. M. A.*, Jan. 23, 1932), from New York City. These are the first cases reported in the literature from New York State and include five patients born in the United States, bringing the total number of reported native cases to thirty-one. All but two of the patients were females and all but two Jewish. Mild to severe anemia was found in all of fifteen cases in which blood studies were made. One is not justified in concluding from this series that there is a definite relationship between primary anemia and this disease. Eosinophilia was found in five of eleven cases in which differential counts were made. The author hopes that this report will stimulate further search for this parasite on the Eastern seaboard.

MACROCYTOSIS OR ERYTHROCYTES AND ACHLORHYDRIA IN PERNICIOUS ANEMIA

Russell L. Haden, Cleveland (*Journal A. M. A.*, Jan. 16, 1932), believes that an increase in size of the average erythrocyte, best indicated in terms of volume, is the most constant and characteristic finding in the blood in the presence of pernicious anemia. An increased volume index was found in every patient in a series of 152 cases studied by him. Free hydrochyloric acid is seldom, if ever, found in the gastric contents of a patient with idiopathic pernicious anemia. An achlorhydria was demonstrated in every one of the 152 patients. The mean corpuscular volume may be quite large even with a relatively high count; therefore it does not vary with the red cell count. If the deficiency which is responsible for the disease is adequately supplied, the cells return to normal size. The first indication of ar elapse or a lack of a sufficient quantity of the missing principle is an increase in the volume of the red cells. Macrocytosis may occur in the presence of conditions other than pernicious anemia, but was found only nine times in a study of 411 patients and normal individuals. Achlorhydria is a frequent finding in various clinical conditions, especially in the age period in which pernicious anemia is most common. A combination of macrocytosis of the erythrocytes and achlorhydria is seldom if ever found, except in the presence of pernicious anemia. The finding of an absence of free hydrochloric acid on gastric analysis and an increased mean corpuscular volume or plus volume index is a practically constant finding and one that is necessary for the diagnosis of active pernicious anemia; if demonstrated, it is almost pathognomonic of the disease.

HYPERGLYCEMIA IN PERSONS WITH ADVANCED SENILE CATARACT

C. S. O'Brien, Iowa City (*Journal A. M. A.*, Jan. 23, 1932), attempted to determine the relationship, if any, between hyperglycemia and senile cataract. Knowing that changes in the lens occur as a complication of diabetes and other metabolic diseases, it was thought that hyperglycemia, if it existed in those affected with senile cataract, might have some part in causing these changes. If there existed even a moderate increase in the sugar concentration of the blood and of the fluids bathing the lens, and this acted over a period of years, possibly there was a deleterious action on the cortical fibers of the lens. It really would not matter whether the patient had clinical diabetes or not; so long as there existed a hyperglycemia, such an action could take place. The study was made on a series of 238 patients with senile cataract as they were admitted to the wards of the hospital for extraction of the lens. The age of these subjects was from 38 to 91 years, 95 per cent. of them being between the ages of 50 and 88. The average age was 66 years. Determinations of the fasting, capillary blood sugar were made by the Boyd micromodification of the Folin-Wu method on 238 patients. In ninety-nine cases (41.6 per cent.) the fasting blood sugar was above the recognized maximum normal limit of 120 mg. per hundred cubic centimeters. It appears, therefore, that abnormally high concentrations of sugar in the blood and body fluids may have a bearing in many cases on the etiology of cataract.

TOO EARLY

A Chicago physician was walking home one night when a footpad snapped out: "Stick 'em up! Fork over the dough!"

"I'm sorry," said the doctor, "but this is only the twenty-second of the month and the bills I sent out on the first haven't been paid yet. If you had waited until the thirtieth I could probably have done something for you."

Original Articles

CORRELATION OF CLINICAL MANIFESTATIONS AND PATHOLOGIC CHANGES IN NEPHRITIS

J. P. SIMONDS, M. D.
CHICAGO

For practical purposes, both clinical and pathological, nephritis can be conveniently divided into two main groups:—those in which the primary damage is to the secretory portion of the kidneys; and those in which the primary lesion is in the smaller arteries and arterioles. Cases of the first type may be either acute, subacute or chronic and have been variously termed parenchymatous nephritis, glomerulonephritis and nephrosis; those of the latter group are practically always chronic and include the so-called chronic intersititial nephritis and arteriolo-sclerotic, primary and genuine contracted kidneys. These two groups are each characterized by definite morphologic changes in the kidneys and each affects the functions of these organs in a different manner.

The chief advantage of this simple classification is that it enables one to make a satisfactory correlation between the pathological changes in the kidneys and the clinical manifestations of the disease, and it furnishes a rational basis of treatment. More elaborate classifications are unnecessary and generally lead to confusion because they attempt to make separate entities and types out of different stages of the same morbid process or out of different combinations of the same unit pathologic lesions; and because they tend to divert attention from the fundamental alterations in the functions of the kidneys.

In order to present the full significance of this simple classification certain facts concerning the kidneys must be mentioned. The kidneys are very complex organs composed of some two million physiologic units. These units are themselves very complex and consist 1. of the afferent vessel; 2. the glomerulus with its loops of capillaries lined with endothelium and covered with flat epithelium which is reflected from the capillary tuft on to the inner surface of the capsule of Bowman; 3. the long tortuous tubule differing in structure as well as in function in its different parts. The blood supply of the first and functionally most important part of this tubule is obtained from capillaries into which the efferent artery from the corresponding glomerulus breaks up. The different parts of this complex physiologic unit are so interrelated and coordinated that damage or destruction of one part results in changes in the other parts of it. Thus destruction of a glomerulus is followed by atrophy or even complete disappearance of the tubule to which it gives rise because the nutrition of the tubule is dependent upon the blood supply from the glomerulus itself.

In a previous paper I have stated that in nephritis there are numerous "possible variations 1. in the different interdependent anatomical elements involved; 2. in the nature and in the intensity and mode of action of the injurious agents that may affect the kidneys; 3. in the number of relatively simple pathologic processes that may occur in the different anatomic elements of the kidneys; and 4. in the degree of chronicity of the disease. When all of these variables are considered the number of mathematically possible combinations becomes so great that one is led to suggest that perhaps there are almost as many types of nephritis as there are patients with the disease."

In the first group or type a great variety of unit pathological changes may take place, such as, thrombosis and embolism of the capillaries of the glomeruli, accumulation of leucocytes in the glomerular capillaries and in Bowman's capsule, proliferation of the endothelium lining, or of the epithelium covering these capillaries, degenerative changes in the capsular epithelium and the tubular epithelium. These changes may occur in varying combinations and it is possible to make pathologic subgroups on the basis of combinations of these changes. But from the clinical standpoint the making of these subgroups is unnecessary, and leads to confusion.

The fundamental effect of these pathological changes in the secretory portion of the kidneys is to increase the permeability of the filtering apparatus of the kidneys. This is the underlying fact in the explanation of the clinical manifestations of this type of the disease. As a result of this increased permeability not only nitrogenous and other waste products but even albu-

*(From the Department of Pathology, Northwestern University Medical School.)

*Read before the Section on Medicine of the Illinois State Medical Society, May 6, 1931, East St. Louis.

min and sometimes blood cells escape through the damaged and hyper-permeable glomeruli. In cases of this type there is, therefore, no increase of blood urea, non-protein nitrogen and creatinin. Phenolsulphonphthalein is excreted in practically normal amounts. Elevation of blood pressure is not present except in occasional cases of acute nephritis of this type when so many glomeruli become occluded by thrombi or emboli or proliferated endothelium or by the accumulation of great numbers of leucocytes, or in the very late stages of the chronic form of the disease when so many glomeruli are destroyed that the remaining intact and functioning glomeruli have been reduced below the factor of safety of the kidneys.

Edema is a characteristic of this type of nephritis and depends upon two factors, namely, the depletion of the blood of its serum albumin and the retention of crystalloids especially sodium chloride in the tissues. Barker and Kirk have shown that the reduction of the serum albumin of the blood to below 1 per cent. results in edema. But this is not the only factor concerned. Sodium chloride is retained not in the blood but in the tissues themselves. This may be a compensatory mechanism for the presence of an excess of crystalloids in the tissues increases the osmotic pressure of the tissue fluids with consequent withdrawal of water from the blood into the tissues. This tends to concentrate the blood plasma and thus partially compensates for the loss of serum albumin.

The quantity of urine secreted in this type of nephritis is characteristically less than normal and its specific gravity is increased. The decreased quantity may be due to slowing of the current of blood through the glomerular capillaries as a result of swelling of the lining endothelium or partial obstruction by the presence of thrombi. The increased specific gravity is due chiefly to the amount of albumin present in the urine. The casts which are a constant finding in this type of disease are formed from the albumin and products of disintegration of degenerating tubular epithelium.

The clinical manifestations of this type of nephritis can therefore be explained on the basis of damage to the glomeruli and the consequent increase in their permeability and loss of serum albumin from the plasma and the retention of crystalloids which may be intimately associated with the latter phenomenon.

In the second type of nephritis the chief and primary lesion is in the arterioles. This is not the ordinary type of arteriosclerosis but more in the nature of an obliterating endarteritis or a hyperplastic elastic thickening of their intima. In either case the lumen of the vessel is gradually narrowed and finally obliterated. This change is widespread throughout the kidneys but is not limited to these organs. It is present in the arterioles of the spleen, pancreas and even in those of the heart, brain and skeletal muscles. It is therefore fundamentally of the nature of a generalized disease of the arterioles of the body. Its occurrence in the kidneys leads to symptoms which have given rise to this type of nephritis. The condition may not be, therefore, primarily a disease of the kidneys, although it affects their function and sooner or later leads to death.

The first symptom of this type is increase in blood pressure. This is due to the generalized disease of the arterioles and narrowing of their lumens. For a time it compensates for the stenosis of the afferent vessels in the kidneys. In order to secrete urine in the normal amount the glomeruli must receive a sufficient amount of blood under an adequate filtration pressure. In the presence of this disease of the arterioles of the kidneys this would be impossible but for the increase in blood pressure which serves as a compensatory mechanism although it is probably not called forth by the changes in the renal vessels alone. The first effects upon renal function manifest themselves when a sufficient number of glomeruli receive insufficient blood under inadequate pressure for filtration. The result is a reduced amount of filtration fluid passing into Bowman's capsule and thence into the tubules. Inasmuch as the fluid which is filtered through the glomeruli has in solution crystalloidal waste products such as urea, creatinine, etc., in the same concentration as that in which they are present in the blood the total quantity of these substances which pass through the glomeruli in 24 hours is reduced and thus retention occurs. Since the glomeruli receive an inadequate supply of blood the nutrition of the tubules which come off from those glomeruli is interfered with and their function is impaired, with resulting subnormal absorption of water.

The net result is an increased quantity of urine of low specific gravity, diminished excretion of waste products and their accumulation in the blood itself. The marked retention of phenolsulphonphthalein which is so characteristic of this type can be accounted for on the same basis as the retention of the normal waste products of the body.

Alteration of the difference between the quantity and specific gravity of day and night urine is a further characteristic of this disease. This "fixation of specific gravity" is due to several factors. In the first place the factor of safety of the kidneys has been reduced even to a negative quantity, so that the kidneys are functioning at or near their full capacity at all times. Furthermore, on account of the increased blood pressure the normal diurnal variations in blood pressure probably do not take place. These facts account for the fixation of the specific gravity of the urine in this type of nephritis.

Patients with this type of disease may die from one of three causes:—uremia, decompensation of the hypertrophied heart, or cerebral hemorrhage. Edema is not an essential of this type as of the preceding form. When it does occur it results from decompensation of the heart and is essentially a cardiac edema, while that of the first type is distinctively a nephritic edema and has an entirely different mechanism.

It is thus possible to differentiate two distinct types of nephritis. In the first type the secretory portion of the kidneys is primarily damaged. The effect of this upon the functions of these organs is to increase the permeability of their filtration apparatus. There is no retention of waste products in the blood nor of dye in renal function tests, but a retention of crystalloids in the tissues, perhaps as a sort of compensatory mechanism, with resultant edema.

In the second type the secretory portion is not primarily damaged. The alteration in function is due to disturbances in the circulation through the arterioles with reduction in blood volume and blood pressure, and, therefore, of available filtration pressure, within the glomeruli. An increase in systemic blood pressure temporarily compensates for this condition but sooner or later retention of waste products in the blood occurs. The increased quantity of urine of low specific gravity is the result of inadequate absorption by the tubules because of interference with their nutrition.

In the treatment of these two types quite different methods would appear to be rational. In the first type a high protein diet should aid in restoring the depleted serum albumin. Reduction of water intake and of salt in the diet should aid in relieving the edema. In the second type a high protein diet would add to the nitrogenous waste products which the kidneys are already unable adequately to excrete. Normal or abundant water intake might aid in flushing out the accumulated waste products.

25 East Walton Place.

DISCUSSION

Dr. N. S. Davis, III (Chicago): I think this is a very convenient and satisfactory method of classification of kidney disease, which has been one of the most difficult things to classify so as to get any correlation between etiological factors or anatomical factors and the clinical course of the disease. I think we have been gradually coming to recognize this vascular type as a clinical entity because of its association with high arterial tension and oftentimes with disease in the heart, and that we have perhaps tried other terminology for the types in which secretory function has been interfered with in which we have had difficulty trying to make the clinical picture fit the anatomical findings.

I should like to ask if the picture in the kidney in the secretory type of disease does not reflect the conditions found in other organs somewhat in the same way that the picture in the kidney in the vascular type reflects the condition in other organs—that is, in neither case is the kidney itself primarily involved, but we are having the picture in the kidney of a process that affects the individual as a whole.

Dr. S. E. Munson (Springfield): I very much liked the Doctor's presentation of this subject on account of the simplicity of the classification.

I should like to ask the Doctor where he applies the nephroses in this classification and particularly, when speaking of the classification, the association between the vascular type and the secretory type, and if we may not have, of course, an involvement of both of these at the same time. In the involvement of the vascular types, particularly in the types of hypertension, there is a discussion as to whether this comes on primarily or whether it is usually secondary to the hypertension.

Dr. J. P. Simonds (Chicago): My paper was so brief that it was impossible to discuss many of the facts that might have been brought out.

In answer to Dr. Davis' question I think that the first type is due to the effect of some toxic or injurious agent of unknown origin and nature, and there certainly is no reason why parenchymatous organs, such as the liver or even the brain might not be damaged along with the kidneys. It happens, however, that most of the damage to the kidney is in the glomeruli. It seems

to me possible that the loss of albumin through the glomeruli may be due not to alterations in their lining endothelium but to changes in the epithelial covering. We know that practically everywhere in the body the endothelium of the capillaries is permeable to albumin because the lymph escaping from the various organs contains albumin. There are but three places in the body where endothelium of capillaries is closely approximated to epithelium, and in all three of those places normally no albumin escapes in the fluid which filters through. One is in the glomeruli of the kidney. In the case of the first type of nephritis, I am inclined to believe that damage to the epithelium covering the glomeruli, rather than to the endothelium, renders them permeable to albumin. That will answer, in a sense, the question in regard to nephrosis.

The nephroses under this simple classification would fall in the first group, but I agree with Bell who has shown that in lipoid nephrosis there is a damage to the basement membrane and epithelium and of the glomeruli.

In regard to the relation of high blood pressure to some of the manifestations of this first type of disease, of course there are two possibilities. One is that since this first type is probably due to some intoxication, it is quite possible for this intoxication to become active in kidneys that are already the site of vascular change or vice versa. In that way mixed types may develop. Again, if the patient with the first type lives long enough there will be sufficient destruction of glomeruli that ultimately retention and high blood pressure will result, so that the first type may, in very chronic cases, gradually assume many of the characteristics of the second type.

COMPLETE SEPARATION OF THE MUCOSA OF THE GALLBLADDER FROM OVERLYING STRUCTURES: REPORT OF A CASE

E. Starr Judd, M. D.,
ROCHESTER, MINNESOTA

and

Charles B. Puestow, M. D.,*
CHICAGO

Various changes are found in the wall of the diseased gallbladder, probably dependent on the nature, degree, and acuteness or chronicity of the infection, and somewhat on the circulatory changes in the organ. Organisms can be demonstrated in the wall of the diseased gallbladder more often than on the mucosa or in the bile.[1] It is generally believed that infection often enters the wall of the gallbladder by way of the blood stream or lymphatic structures.[2] The vascular walls may gradually thicken, and the lumens diminish in size or become completely occluded. Sometimes, especially in the presence of suppuration, gangrenous changes occur. These are most frequently localized to small regions of the gallbladder, but may involve the entire organ. There are a number of reports in the literature of gangrene of the entire gallbladder, with partial or complete separation of its

Fig. 1. Slough of entire mucosa of the gallbladder. It has been opened and the inner surface is presented.

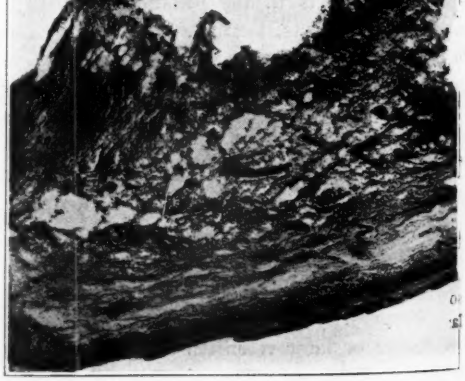

Fig. 2. A portion of the mucosa (x 17).

*Formerly a Fellow in Surgery, The Mayo Foundation, Rochester, Minnesota. Submitted for publication December 7, 1931.

attachments to the liver, leaving the gallbladder suspended by the cystic duct and its accompanying structures. Stavraki reported a case in which even the cystic duct had divided, and the entire gallbladder was found free in the peritoneal cavity.

Separation of the mucosa from the overlying coats of the wall of the gallbladder may occur in the presence of suppuration. However, it is not a usual finding, and no report could be found in the literature of complete separation of the mucosa of the gallbladder from the remainder of the wall. Therefore, the following case seems of sufficient interest to report:

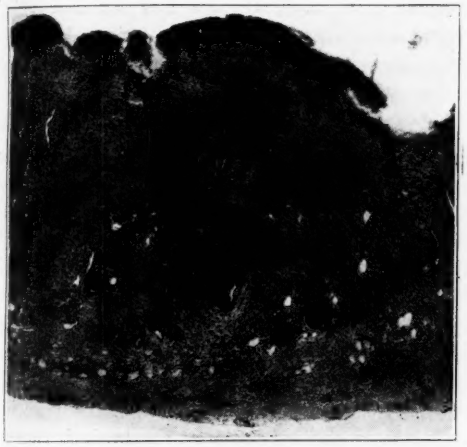

Fig. 3. The portion of the wall of the gallbladder which remained. Several blood vessels are visible; their walls are markedly thickened, and the lumen of one is entirely occluded. The muscular layers are replaced by fibrous tissues (x 19).

REPORT OF CASE

The patient was an obese Italian woman, fifty-six years of age. There was nothing of importance in her family history or in her previous medical history. During the last two and a half years she has had recurrent attacks of severe pain in the right side of the abdomen, at the level of the umbilicus. In the early attacks, the pain radiated to the right lumbar region, but later it remained localized in the right side of the abdomen. The pain was prostrating and morphine was required for its relief. For one to two weeks following each attack there was residual soreness in the right side of the abdomen. At first the attacks occurred once every three to four months, but they increased in frequency until they averaged once a month, and sometimes they occurred at weekly intervals. The last few attacks were accompanied by an increase in temperature to about 102° F. She had had very little dyspepsia and never had been jaundiced.

General examination gave evidence of a firm mass in the right upper portion of the abdomen. There was very little tenderness. Studies of blood and urine gave negative results. Because of the history and physical findings, operation was deemed advisable without further study.

The abdomen was opened by an upper right rectus incision. There was a large abscess below the liver containing several ounces of thick, yellow-white odorless pus, and many gallstones. The mucous membrane was entirely separate from what remained of the gallbladder, and was floating freely in the abscess cavity. It was in the form of a complete sac, unbroken except in the region of the cystic duct. The remainder of the wall of the gallbladder was fibrous, thickened, and adherent to surrounding structures. A large portion of the wall was dissected out, leaving behind that portion attached to the surface of the liver. The choledochus and hepatic ducts were not explored. Split rubber tubes were placed for drainage and the wound closed about them.

Examination in the pathologic laboratory disclosed that there was a single slough of the entire mucosa. Histologic sections of this demonstrated the structures of the mucosa, with extensive gangrenous degeneration. The remaining portions of the wall of the gallbladder, which were removed, were considerably thickened and fibrotic. Histologic sections of these did not disclose the presence of the mucosa in any portion. The muscular layers were almost entirely replaced by fibrous tissue. The walls of the blood vessels were markedly thickened; the lumens were diminished in size, and some vessels were completely occluded. There were many gallstones; the largest was 1 cm. in diameter and the smallest, 8 mm. The pathologic diagnosis was subacute gangrenous cholecystitis on chronic cholecystitis and cholelithiasis.

The patient had an uneventful convalescence and was dismissed from the hospital on the fifteenth day after operation. Her wound continued to drain for several weeks and then entirely healed.

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DISEASE OF THE ORBIT*

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This is not intended as a highly technical essay but more as an aid to those who only occasionally come in contact with such conditions, conditions which are by no means rare in large clinics devoted to this branch of medicine.

In a consideration of the pathologic states of the orbit, one must at all times be able to thor-

*Read before Peoria City Medical Society, Oct. 20, 1931.

oughly visualize this bony truncated cone and the adjacent anatomic structures, disease of which frequently determines the etiology and symptoms of disease of this cavity. It is necessary to know the definite position of the different para-nasal sinuses and the results to be expected when infected or exerting pressure on the orbital contents.

In order to avoid detailed description of the sinuses and their relation to the orbit which can be found in any text-book on anatomy we will refer only to those structures that play a more important part in this study.

The orbital plate of the ethmoid labyrinth with its many cells, some of which may directly communicate with the orbit or may only be separated from it by a membrane or very thin layer of bone, forms the nasal wall of the orbit. The lamina papyracea is the most vulnerable part of this structure and is the most frequent point through which infections enter the orbit from the ethmoidal cells. The roof of the orbit is formed by the frontal bone separating this cavity from the anterior fossa of the skull and has in its upper nasal angle the frontal sinus. The outer wall is made up largely of the malar and greater wing of the sphenoid bones and is rarely the seat of disease. The floor of the orbit is formed by the roof of the antrum of Highmore or maxillary sinus and therefore may be influenced by abnormalities of this cavity. In the lower inner angle of the orbit is found the lachrymal fossa and sac which is frequently diseased and can be a source of orbital infection.

In the apex of the orbit we have many important structures and apertures for the transmission of vessels and nerves and in addition the proximity of the posterior ethmoidal cells and sphenoid sinuses which must be reckoned with in this discussion.

In general, it is best that the evidence common to most of the diseases be ascertained and grouped in regular sequence and the points of differentiation noted as follows:

Is the condition unilateral or bilateral; are inflammatory symptoms present or absent, is the intra-palpebral space (opening between the eye lids) enlarged or contracted, is the eye ball protruding or retracted, if so is it in the center of the orbit or pushed to one side.

If the condition is unilateral and attended with symptoms of acute inflammation, we must first be able to definitely rule out disease of the eye lids before we can say the orbit is involved. The tissues that make up the eye lids are of such character and susceptibility to infection and reaction that a differential diagnosis is sometimes very difficult. A harmless hordeolum (stye) or lid abscess may assume such proportions both physically and sensory that it will be utterly impossible to separate the eye lids for deeper inspection or palpation. It may at times be necessary to postpone a positive diagnosis for a day or two when the acute symptoms will have subsided sufficiently for proper inspection. The eye lids being now separated we can examine the state of the eye ball and ascertain if it is involved, freely movable or proptosed (pushed forward); is the conjunctiva edematous, infiltrated or just inflamed. The degrees of conjunctival injection or edema is almost entirely dependent on the kind of organism present, its virulence and the tissue reaction manifested. If we can conclude that the orbit or its contents is involved, we must next ascertain the source of infection. If the infection of the orbit is due to a penetrating wound from the outside this can be readily determined by the history and the evidence of the point of entrance of the foreign body. If we can exclude a penetrating wound, we may reasonably say that the infection is from the adjoining sinuses. Metastatic infection is comparatively rare and that due to the tubercle bacillus or the spirocheta pallida does not produce the acute symptoms present in such a picture.

In the absence of acute inflammatory symptoms the diagnosis may or may not be difficult, but an immediate diagnosis not being urgent we may study the case and its history at our leisure. Here again must we first determine the position of the eye ball in the orbit, whether it is proptosed directly forward or to one side, is the eye ball replaceable or not replaceable. If the eye ball is pushed directly forward and is not replaceable we may assume that a retro-orbital mass is present and of such consistency that does not permit of reduction by pressure. If the eye ball is replaceable we may say that the mass is of such consistency that pressure will reduce it, as in ethmoidocele, cephalocele, angioma, etc.

If the eye ball is pushed forward and eccentrically or purely to one side, the position of the eye ball in the orbit will determine from what

direction the force is being applied. Inspection of this region will usually give one the information necessary for the proper diagnosis of the origin of this abnormal state.

The ethmoidal cells more frequently involved in such cases being usually posterior to the equator of the eye ball will naturally push the eye forward and downward and outward. The frontal sinus malformation or disease will push the eye downward and outward, whereas maxillary sinus pathology will push the eye upward and forward. Thus the position of the eye ball in the orbit and the state of the tissues involved is of much value in such a determination.

Acute Orbital Cellulitis is more frequently due to infection, secondary to suppuration of the ethmoidal cells. It may be due to a penetrating wound and infection or occasionally may be due to an acute frontal sinusitis, but in the latter very definite symptoms of disease of that cavity are present. If it should be of metastatic origin the symptoms and treatment are still the same. Disease of the adjacent sinuses can be ascertained by rhinoscopy and x-ray plates. The symptoms consist of marked redness and swelling of the eye lids, injection and edema of the conjunctiva, a degree of proptosis, sometimes limitation of motion of the eye ball, very painful especially to palpation, temperature is usually not high, rapid pulse, preceded by chills and the preauricular glands may be palpable.

Treatment is intra-nasal and intra-orbital, surgical and non-surgical. The rhinologist prefers operating on the sinuses involved, the ophthalmologist usually favors direct orbital surgery. To this writer the orbital route seems to be the only logical method; it is simple and not attended with the dangers of the nasal route which I have seen followed by meningitis, intracranial abscess and death. In the stage of orbital cellulitis before abscess formation the therapy must be limited to paliative measures locally and intra-nasal. In the abscess stage we usually find the pus located at a level below that of the sinus involved, therefore drainage is at a disadvantage. In addition we have the danger of infection traveling along the peri-neural spaces of the olfactory nerve fibers with ethmoidal surgery during the acute stage. The intra-orbital route is simple and not attended with these dangers and the pus is drained from the lowest level. A general anesthetic is usually necessary, the lids are widely separated and incision made through the conjunctiva between the insertion of the internal and inferior recti muscles. This incision may have to be carried quite deeply, but attended with no danger to one familiar with the anatomy; forceps are then passed into the wound and the blades are separated when a creamy yellowish pus usually gushes out. A rubber tube or sheet drain is inserted into the wound for drainage and a voluminous dressing applied. Subsequent treatment consists of maintaining drainage locally and non-surgical attention to the sinuses through the nose.

Fig. 1. Acute Orbital Cellulitis with Abscess formation.

Emphysema of the Orbit is usually due to trauma as the result of an external injury or manipulation, following the use of instruments for the purpose of irrigating the maxillary antrum or the lacrymal sac and the subsequent blowing of the nose. The latter is brought about by the instrument passing beyond the intended area into the subdermal spaces and on blowing the nose the air is forced under the skin. When due to external violence it is usually associated with fracture of the nasal or lacrymal bones. The symptoms are quite marked but not as a rule associated with pain. The skin in the region of the orbit may become intensely swollen. The diagnosis is readily made by the crepitus on palpation. Treatment resolves itself into topical applications and avoidance of blowing the nose.

Periostitis of the Orbit when due to trauma usually involves the rim of the orbit. The history, time of onset, symptoms of acute pain on pressure and the absence of marked symptoms of infection will be sufficient for a diagnosis. The duration, if uncomplicated, will be from a few

days to several weeks. If it persists for a longer time we may suspect an underlying cause of more serious character such as tuberculosis or syphilis.

The tuberculous and syphilitic types usually involve the deeper structures and more frequently manifest themselves in some degree of proptosis of the eye ball with eventual fistulous opening with little or no tendency to heal.

The differential diagnosis is as a rule not difficult in the presence of a fistulous tract. But before that stage is reached it is usually attended with some degree of proptosis, the eye ball is not replaceable to the same degre as in the normal case, acute symptoms of inflammation are absent and the history is very vague and indefinite. Tuberculosis is more frequently seen in the very young or in the very aged in the advanced stage of pulmonary tuberculosis, whereas syphilis is more frequently found between ages 20 and 40. X-ray plates and serologic tests are of much value in the differentiation. In the hands of one thoroughly familiar with the anatomic structures involved, it is a simple matter to pass a fairly large caliber needle with a syringe alongside of the eye ball deep into the orbit and attempt to withdraw retained fluids. If due to tuberculosis evidence obtained is very convincing if one strikes the abscess cavity; in syphilis no pus will be found but occasionally one may meet some liquified detritus. In the presence of tuberculosis, surgical interference is indicated, in lues medical treatment must be resorted to.

Thrombosis of the Cavernous Sinus is fortunately quite rare and yet may confront one the very next day. It is not difficult of diagnosis when once seen. It is most frequently due to an extension of a thrombosis of the petrosal sinus as a part of the picture of a lateral sinus thrombosis, the latter usually due to caries of the petrous bone. It may also follow an orbital cellulitis or a metastatic infection. The picture consists of a proptosis of the eye ball, marked venous stasis both externally and ophthalmoscopically; temperature of the rapid rise and fall variety, chills, pain and intra-cranial symptoms. This lasts for a few days when the other eye may become involved if death does not intervene before.

Pulsating Exophthalmus. The name fully describes the condition—it is unilateral, the eye is proptosed and on palpation a distinct thrill is felt. If a stethoscope is applied to the eye lid covering the eye ball one hears very plainly, a bruit which can be heard out to the lateral side of the skull. If pressure is applied with the finger to the internal carotid artery, the pulsation, bruit and thrill ceases. Vision may become impaired and definite tortuosity of the vessels of the retina is to be noted. Treatment consists of ligation of the internal carotid, which must be done with great care.

Exophthalmic Goiter or Basedow's Disease. The diagnosis of this disease in the typical case is of course not difficult, but with the attention and intensive study this disease has received of late years, types of cases are now recognized as belonging to this classification which were not so diagnosed years ago. The typical case with its bilateral exophthalmus, Von Graeffe, Moebius, Stellwag and Dalrymple signs, tachycardia, tremor, etc., are common. In the unilateral cases with a low metabolic rate the diagnosis is at times very difficult and may have to be differentiated from an orbital cyst, neoplasm and other similar conditions. Such cases at times will require intensive study over a long period before a satisfactory course can be decided upon and then a guarded prognosis as to the exophthalmus should be advanced.

Fig. 2. Typical Case of Exophthalmus Goiter.

As a result of the enthusiasm for thyroid surgery, which unquestionably has been of much benefit to mankind, there has developed an ophthalmic entity which is a source of much worry and disappointment to the surgeon. I particularly refer to the exophthalmus that takes place some time after the thyroidectomy and to those cases in which the exophthalmus was present before surgery and instead of being arrested or improved goes on to an increased proptosis. Some of these cases become so marked that ul-

ceration of the cornea follows and results in loss of the eye balls. These cases are not rare at this time and must be guarded against in the most expert hands. It would appear from our present knowledge on this phase of the subject that very little is known just why it takes place and in what type of case it will appear. The ophthalmic problem may be very serious and even in the milder cases requires the utmost diligence to control corneal ulceration. The cosmetic effect though not serious is very annoying and may in some cases be controlled by plastic surgery where medicinal measures have failed.

Fig. 3. Serious type of Exophthalmus Goiter. Exophthalmus developed some time after thyroidectomy.

I have recently seen a case of acute bilateral glaucoma develop in a young man who a few days previously had had his thyroid removed. The condition was watched for about two weeks and had to be operated on for glaucoma owing to the maintenance of a tension of 50 by Schiotz and the inability to reduce this intra-ocular pressure.

Tumors of the Orbit. A diagnosis of this condition is only possible if the intra-orbital growth assumes such proportions as to produce symptoms, which will almost be limited to displacement of the eye ball from its normal position. The eye ball may be pushed forward, downward, upward or laterally or combinations of these positions, e. g., downward and outward, etc. One must first ascertain if the deplacement is the result of disease as in hyperthyroidism or is it mechanical, that is due to a force, e. g., tumor or cyst which by its growth is pushing the eye ball from its normal position. An eye ball normally can be pressed backward into the orbit for some distance, but if a hard or semi-hard mass is present back of the eye ball, the ability to push the eye ball backward will be limited; the degree and character of this resistance will indicate the character and size of the mass in the orbit. As a rule tumors and cysts of the orbit are unilateral, the exception is rare. The direction of the displacement of the eye ball is important to the diagnosis of the type of the mass producing the displacement and the approximate origin of the mass. Thus an osteoma of the frontal sinus will displace the eye ball downward and outward, whereas an osteoma or cyst from the ethmoidal cells will displace the eye ball downward, outward and forward. A soft tumor or slowly growing tumor originating in the apex of the orbit will most likely push the eye ball directly forward. A tumor or cyst originating in the maxillary antrum will push the eye ball upward and propably forward. Limitation of motion of the eye ball is also frequently noted and may be the result of marked displacement or involvement of the extrinsic eye muscles. Where the tumor originates outside of the eye ball the fundus findings are usually limited to interference with the circulation or that due to pressure on the optic nerve with its associated symptoms of visual disturbance.

Cysts of the Orbit are of several kinds; probably the most common types met with in our clinic is the ethmoidocele. This usually appears in the region of the lamina papyracea and will displace the eye ball outward and forward if it is permitted to progress to such proportions. In some cases I have seen such a cyst present itself in a manner so as to give the appearance of a lacrymal sac involvement, but when dissected out it is found to be much deeper and originating from the ethmoidal cells. They are easily palpable and can be aspirated quite readily for diagnostic purpose.

Dermoid Cysts are usually found anteriorly in the upper outer and upper inner angles of the orbit, but must be differentiated from a cephalocele or hernia cerebri, which is more frequently found in the upper inner angle of the orbit. The dermoid may be dissected out quite safely without danger, or may be left alone. Its only indi-

cations for removal are its position and the cosmetic effect desired.

Cephalocele or Hernia Cerebri most frequently appears in the upper inner angle of the orbit and is due to a cleft between the frontal and ethmoidal bones. Recently I saw a case of the most pronounced type with a cleft in the roof of the orbit that was easily palpable and confirmed by x-ray plates. The latter type of case is very rare and is attended by marked intra-cranial symptoms under the slightest movement of the head from the erect position. In the more common type the symptoms are usually mild and the one complained of most is the disfigurement.

Angiona is the result of a new development of blood vessels in the orbit and is very difficult to differentiate from aneurysmal dilatations. The cavernous type is more serious and may assume proportions and produce symptoms that are very annoying and disfiguring. They are best left alone if the symptoms are not marked. These symptoms consist of proptosis, feeling of fullness

Fig. 4. Ethmoidocele with Lachrymal Sac involvement.

in the orbit and disturbances of vision which are aggravated by muscular effort and the emotions. Angiomata and cephalocele can be readily reduced by pressure or exaggerated when the patient is allowed to lower his head, cough or strain. Treatment in this type of cases which is surgical must be under the most aseptic conditions.

Fig. 5. Sarcoma of the Orbit.

The Neoplasms consist of the malignant and non-malignant types, the former unfortunately predominating. The clinical differential diagnosis is not easy and at times impossible. The history, palpation and clinical observation as to the rate of growth of the mass are important. In the rapidly growing tumor there is in addition to the displacement of the eye ball evidence of dilation of the veins of the face in that region. The one redeeming feature in the differential diagnosis is that the malignant type more frequently originates within the eye ball and breaks through the sclera into the orbit. Therefore the history of such a type or the locating of the tumor within the eye ball helps in the diagnosis. In the young, that is, under ten years of age, the most frequent type met with is glioma, in the adult the sarcomata predominate. Of the type originating extra-ocularly the site of origin may be from the bones, periosteum, muscles, connective tissues, etc. Primary carcinomata in this region are very rare, and when they do appear usually originate from the lacrymal gland.

Secondary formation of malignant tumors in the orbit may occur by extension from adjoining tissues or by metastases.

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NON-VENEREAL PROSTATITIS*

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I wish to go on record as saying, that not every case of prostatitis is of venereal origin and that every seat of focal infection is not in the tonsils and teeth, but very often found to be in the prostate gland where the majority of general practitioners fail to examine, either from negligence or ignorance, the prostate gland as being a seat of infection.

The older text-books said nothing about the prostatitis other than venereal. The more recent text-books do not stress it as being of much importance.

Outside of the G.-U. specialist or urologist, many doctors who have taken the trouble to make a prostatic smear, make only one, while the G.-U. man will make at least three before he will rule out the prostate gland as a focus of infection.

The history of never having had a previous gonorrheal infection should make no difference to the doctor; he should make an examination of prostatic secretion when seeking a focus of infection.

Greenberger of New York claims 25% of the prostatitis cases are non-venereal. Culver of this city claims 20% are non-venereal. Theo. Baker in a writing quotes Hugh Young as claiming 25% non-venereal. Guiteras and Cabots' text-books of 1926 do not mention non-venereal prostatitis. Randall in writing on abscess of the prostate, reports 16 cases, eight with G. C. infection, and eight non-venereal. Cunningham in his year book of 1925 mentions a prostatitis which is focal in character and may arise from organisms in the blood and urine. Wolbarst in his text of 1927 mentions a type of non-venereal prostatitis found at the incipiency of an acute G. C. infection in young men who never before suffered from G. C. But he says nothing regarding the prostate as a focus of infection.

In Tice's Medicine he mentions infection of the prostate gland and says they are most commonly gonorrheal in origin, but may be due to streptococcus or tuberculosis.

Culver concludes that other organisms such as Staphylococcus albus and aureus, pneumococcus, streptococcus and colon bacillus may be the exciting cause of chronic prostatitis and vesiculitis and a chronic infection of these may be responsible for sub-acute and chronic arthritis.

Barney and Fuller noted that many arthritic cases have been cured or improved by draining a genito-urinary focus of infection. Lowsley and Kerwin text states that the prostate gland is undoubtedly one portal of entry for septicemia and when the gonococcus is the offending organism, it is practically always the original focus and further states that the prostate is regarded as a very frequent focus of infection and second only to infected tonsils, as a cause of arthritis, and may be responsible for endocarditis and neuritis.

Von Lackum reports 40% of his cases were non-venereal, and that dental and tonsillar infections were responsible for many of these cases. Deneen agrees that the prostate and seminal vesicles represent the most neglected fields in medicine.

Anatomy: The prostate is an irregular, glandular organ, situated deeply in the pelvic cavity below the bladder, and is covered by an fibromuscular sheath. A sulcus divides it into two lateral lobes, and a so-called median lobe may develop in old age. The size varies as to age. Rudimentary in early life, increases in size rapidly to the age of puberty and reaches its full development at from 20 to 25 years of age, and seems to remain stationary to the age of 40 or 45, then may start to grow larger and in 60 or 70 we have the so-called senile hypertrophy.

The function of the prostate is genital, its secretion mixing in the act of ejaculation and also of endocrinological value in that its internal secretion stimulates testicular function.

The organisms found in non-venereal prostatitis according to Herrold of this city, in order of their frequency are: Staphylococcus albus, diphtheroids, strepto viridans, staphylo aureus, hemolytic strepto and colon bacillus. He mentions neither pneumonicoccus or typhoid. I think the colon bacillus is the most predominating.

Diagnosis: The diagnosis of non-venereal prostatitis is made by palpation and prostatic smears and a study of the urine. On palpation we may find an indurated mass on one or both lobes, which may or may not be painful, and usually not compressible. Or you may find an

*This article was read before the Medical Staff of the Norwegian-American Hospital, Chicago, Illinois, Nov. 20, 1931.

enlarged boggy prostate with little or no pain. Very often you will find no abnormalities at all.

The prostatic smears are the most important and must be examined thoroughly for bacteria. And again, one smear is not enough, but a study of from 3 to 5 smears at different times must be made and then sometimes the bacteria are not found until a provocative stimulation is used, such as a Kollman dilator, followed by an instillation of silver nitrate, 2 or 5%. If secretion cannot be obtained after several massages then the urine voided after massage should be compared with an ordinary specimen, and if the urine after massage contains more pus cells than the ordinary specimen it is quite safe to make a diagnosis of a chronic prostatitis.

Symptomatology: This chronic infection of the prostate may be there for several years before you may have any symptoms, or any signs that would lead you to suspect some prostatic involvement. The local symptoms may be very slight, there may be some urethral discharge, but it is so slight the patient hasn't noticed it, but he will tell you, he does notice on straining at stool a discharge, which is a prostatic secretion.

There is aching in the groins, testicles or perineum and some low backache. Sexually we find weak erections or none at all, premature ejaculation and itching around the anus and perineum, which is quite annoying.

In the blood findings you will usually note some leucocytosis as in any chronic infection.

The urine may be cloudy, but will not always have a pyuria; there may be some few pus cells, not always.

The nervous symptoms are very important, in that you are dealing with a patient made nervous by a chronic infection. He will have psychic impotence, loss of pep, worry, melancholia and always a depressed state of mind.

You will find the neuralgias, myalgias and different forms of arthritis which are dependent upon the prostatic involvement. The secretions expressed will contain any of the bacteria, and more especially the Staphylo and colon bacillus.

On account of his nervous state and his fatigue this class of patient usually falls into the hands of a neurologist who in turn overlooks the prostatic gland. If the internest sees him he will give him a most careful examination with x-rays of teeth and sinuses, blood and stool examinations but will forget all about the prostatic gland as a seat of infection.

The prostatorrhea that always occurs in chronic prostatitis does no harm and in no way impairs the sexual function or shortens the sexual life. (Dr. Keys says in his latest text, "I have lived long enough to know that.")

Latent prostatitis is a definite clinical entity and without provocative treatment many cases are undiagnosed, and in others a maximum relief is not attained.

Prostatic focal lesions are very common and no investigation of foci in the male is complete without a thorough examination of the prostate gland.

Treatment: The first and most important is to clear up the infection elsewhere, tonsils, teeth and sinuses. Prostatic and vesicle massage, gently at first and gradually increasing pressure to meet the patient's tolerance. Irrigations or instillations of some mild silver salt. Passing of full sized sounds every four or five days. If strictures should be found they must be ironed out. These treatments are best given in courses of about 15 to 20 treatments then about 4 to 6 weeks' rest between courses. Hot sitz baths are of aid, but should not be taken too often to weaken the patient.

Electrical diathermy may be used if necessary, or the electric prostatic heater devised by Bransford Lewis.

Intestinal hygiene must be observed and a diet of fruit and fruit juices to keep the bowels open, and for alkalinization if needed. The use of drastic purgatives, alcohol and highly seasoned foods must be avoided.

Vaccines are of no special value, as each prostatic massage forces some toxins into the blood stream.

Sexual excesses and irregularities must be forbidden, but a regular sexual life does no harm; sexual hygiene must be adhered to however.

CASE REPORT

Case 1. Mr. B., shoe merchant, married, two children. No history of previous venereal infection. About one year ago he began complaining of severe pains in the lumbar region, not relieved by lying down, not radiating, and no urinary symptoms. The pain was so severe and lasting he called in medical aid, causing him to have teeth x-rayed with one extraction, tonsils removed, sinuses x-rayed by a specialist and found negative. After taking plenty of medicine and heat treatments, and a series of mud-baths he was still suf-

fering. On examination, I found urine clear and negative. On prostatic examination I found an indurated mass the size of a small pecan on the left lobe and the expressed secretion showed colon bacillus. After a series of massages and soundings for a period of eight weeks, he is free from pain and back to work. He also received ten diathermy treatments.

Case 2. Mr. P., janitor, married, three children. Denies ever having a venereal infection. Eight months ago he began having a severe neuritis involving the sciatic area. The pain was so intense he had to stop work and at times had to have an opiate. Two teeth were extracted, tonsils were removed, nasal sinuses x-rayed with negative findings, but the neuritis persisted. On examination I found a clear urine with negative findings, but on prostatic examination, I found an indurated mass on the right lobe about the size of a walnut and quite painful. The prostatic smear showed colon bacillus, and after a series of 6 diathermy treatments, massage and soundings for two months, his neuritis has entirely disappeared; he has gained in weight and is back at work.

Summary:

1. Because of the enthusiasm that has prevailed over the teeth and tonsils as infected foci, the prostate and seminal vesicles as sites of foci of infection have been entirely overlooked, until just recently.

2. Non-venereal prostatitis is not stressed sufficiently in the text-books.

3. The diagnosis is most important and the examination of the secretion means more than palpation of the gland.

4. The symptoms may be taken for several diseases and there is a variety of symptoms.

5. Treatment may be satisfactory but requires lots of time and patience.

6. Infected foci in other organs must be removed.

7. Sexual hygiene must be adhered to.

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THE OLD AND THE NEW IN MEDICINE AND SURGERY*

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In the field of medicine and surgery, as in other avenues of effort, we are reminded that King Solomon once said that there is no new thing under the sun. Hundreds and thousands of years ago, our medical forefathers, hampered as they were by their relative ignorance of anatomy and physiology, laid the foundation stone upon which, during the past hundred years or so, there has been builded an edifice, buttressed by science, but upon which the coping stone has yet to be laid.

From the day of primitive people up to the advent of anesthesia and asepsis, surgery was almost entirely wound surgery. That there was a fairly good knowledge of medicine and some surgery long before the time of Hippocrates (460-370 B. C.) is proved by the fact that he, himself, wrote a treatise on ancient medicine. In fact, records which have been found show that a fairly competent knowledge of medicine and surgery existed in Babylon and Nineveh. The Ebers Papyrus of the period of 1500 B. C. and the Edwin Smith Papyrus, which is older, mention disease in many forms, incidentally malignant disease, as well as certain drugs used today and instruments, such as the cautery and forceps. The principle of our modern psychotherapy had its inception in the therapeutic superstitions of primitive man and the earlier civilizations.

Thousands of years ago books on disease were written in China, and it is recorded that the Chinese knew of inoculation against smallpox. They believed that the skin of a toad had a cardiac stimulating action which, to later generations, seemed absurd. But some twelve years ago, Dr. John J. Abel, Professor of Pharmacology of the Johns Hopkins University School of Medicine, succeeded in obtaining the cardiac stimulant present in toad skin, in crystalline form.

Evidently, blood letting is as old as the immemorial hills. Hippocrates advocated it in the

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acute infections. Because of the abuse of venesection in the latter part of the eighteenth and the first half of the nineteenth century, it was practically abolished for a time, but its judicious and timely use has once again been reestablished.

In the code Hammurabi (2500 B. C.) there are references to medical and surgical subjects. The ancient Hindus are believed to have been the pioneers in plastic and reparative surgery, and they used the actual cautery very largely. Ancient India had an elaborate hospital and nursing organization.

But all the ancient civilizations only led up to that of Greece, who made a cult, almost a religion of health, beauty, and physical fitness. Esculapius was the tutelary deity of the healing art, and all medicine of the early Greeks was in his hands. But Hippocrates, to a large extent, caused the separation of the priesthood from medicine. He was the first to take histories of cases, to notice and tabulate symptoms, examine the urine, complexion, temperature, respiration, and to employ auscultation. He advocated exercise, fresh air, and sunlight, the use of baths, massage, cold effusions, and deprecated the habitual employment of purging drugs. Today we are reverting to his teachings, i e., keeping the body fit to prevent disease. His treatment of fractures, dislocations and wounds was essentially as that of today. He is said to have cured a case of rheumatism by the extraction of a tooth, and was the first to differentiate disease. He taught that accurate observation is the sheet anchor of clinical diagnosis.

Aristotle of Greece created the beginning of zoology, comparative anatomy, and embryology.

In the Old Testament, medical matters are concerned largely with social hygiene. The cause of the spread of bubonic plague was foreshadowed in the Sixtieth Chapter of Exodus: "In the midst of the land mice were brought forth, and there was a great and deadly destruction in the city."

With the deterioration of Greek civilization, three hundred years after the death of Hippocrates, Greek medicine emigrated to Rome, and the principles of the Father of Medicine were somewhat revived by Galen (131-201 A. D.), whose dogmatic views, however, set back the march of progress in medicine and surgery many centuries. Ours is not the first age of specialization, for Galen mentions oculists, aurists, dentists, lithotomists, gynecologists, dermatologists and herniotomists.

During the Greco-Roman era of medicine, a layman, a Roman patrician, Celsus, wrote a full account of heart disease, described the subject of cancer, and was the first to recommend the use of nutritive enemata.

The most profuse writer of this period on medicine, natural history and allied subjects, was Pliny the Elder (23-79 A. D.). He referred to intestinal toxemia, and recorded that the sacred ibis of the Egyptians gave themselves enemata by introducing water by their beaks into "that part by which it is especially necessary for health that the residuous food should be discharged."

Surgical instruments abounded in Ancient Rome, and operations for hernias and cataracts were done; Cesarean sections were performed. Celsus, Leonidas of Alexandria, and Galen described plastic operations on the face, mouth, nose and ears.

Soranus of Ephesus (98-138 A. D.) introduced the obstetric chair and podalic version in place of using instruments in difficult labor.

The medico-chirurgical treatise of Abulcasis (986-1013) the greatest of the Arabian surgeons, was the leading text-book for generations. The first of these books deals entirely with the actual cautery.

At Salerno, in the medieval period, women were active in medicine, and an attempt was made here to bring medicine under state control. In this same period, the "Dark Age" of medicine and surgery, Theodoric of Luca (1205-1296) and Henri de Mondeville (1260-1320) were active pioneers of asepsis.

During the Renaissance (1453-1600) many remarkable discoveries were made. Paracelsus (1493-1541) combatted the doctrines of Galen, proclaimed his belief in asepsis, introduced mercury in the treatment of syphilis and founded chemical pharmacology. Vesalius (1514-1564) so interpreted anatomy as to make it possible for surgery to relieve deep seated injuries and diseases. Leonardo da Vinci (1452-1519) considered the greatest artist and scientist of the Renaissance, was the founder of iconographic and physiologic anatomy. Paré (1510-90), among other advances, practiced débridement, which was largely employed during the World War, was probably the first, according to Dr.

Howard Kelly, to recognize flies as the transmitters of disease, introduced and reintroduced many operations, permitted nature to do her own work instead of continuing the practice of using boiling oil in the treatment of wounds, brought reforms into the practice of obstetrics, and invented a large number of surgical instruments.

It is obviously impossible to mention all who helped build modern medicine and surgery, but there was one who explored an unknown region —Jerome Carden (1501-1576), the first competent psychoanalyst, as well as the first intelligent delver into biologic phenomena. The germ of the Freudian doctrine is contained in the theory of the distraught psyche of Stahl (1660-1734). The North American Indians had some conception of this, for one of the Jesuits working among them, wrote in 1610: "They believe that there are two main sources of disease: one of these is in the mind of the patient himself, which desires something and will vex the body of the sick man until it possesses the thing required. For they think that there are in every man certain inborn desires, often unknown to themselves, upon which the happiness of the individual depends."

Endocrinology is not a new subject for, from remote antiquity, man has been aware that the gonads exert an influence on the development and structure of the body. In 1779, Wilmer of Coventry, England, clearly defined a bronchocele and recognized the relationship between intestinal stasis and certain types of goiter, for he urged those so afflicted to "take a vomit and a purge during the increase of the moon."

Different types of lunacy and suggested treatment were described by Bartholomaeus Anglicus in the middle of the thirteenth century.

Fra Paolo Sarpi (1552-1623), the great Venetian astronomer, mathematician, anatomist, while examining the specific gravity of the blood, discovered by pure reasoning, the valves of the veins, and foreshadowed by some years Harvey's (1578-1657) discovery of the circulation of the blood.

Malphigi (1628-1694), the greatest of the microscopists, with Redi (1626-1694) prefigured, by the use of the compound microscope (the discoverer of which is not known) modern bacteriology. In this period, Sydenham revived the clinical teaching of Hippocrates.

In the Eighteenth century, the Hunters, William (1718-1783) and John (1728-1793), were largely responsible for laying the foundation of modern surgery.

The Nineteenth century brought the discovery of anesthesia, asepsis and that puerperal fever is contagious.

Anesthesia was known to primitive peoples and the ancients, although none of the drugs used was apparently sufficiently effective. It was mandragora, undoubtedly, which was offered to Christ on the Cross, and which he refused. Dioscorides (54-68), the originator of the materia medica, mentioned this drug. Shakespeare mentioned it in several of his plays. In 1799, Sir Humphrey Davy (1788-1829) discovered the anesthetic properties of nitrous oxide, which holds such a large place in the field of anesthesia today.

Less than one hundred years ago, Oliver Wendell Holmes (1802-1894) and Ignaz Phillipp Semmelweiss (1818-1865) proved that puerperal fever is contagious, and thus saved the lives and invalidism of countless women.

The principles of antisepsis and asepsis were found and demonstrated by Pasteur, and these principles Lister had the genius and foresight to recognize and apply to the treatment of wounds.

The advance or retrogression of medicine and surgery will depend wholly upon the advance or retrogression of civilization. Hippocrates was the guide to modern medicine, and Celsus, Paracelus, Vesalius, Paré, Sydenham and the Hunters were his followers. It may be that progress in medicine lies in biochemistry, and that the practice of medicine will be preventive rather than in curative or remedial methods. Modern medicine, the new, has learned much from the medicine of Hippocrates, the old, and much more can still be learned. Both in medicine and surgery there are still great problems to be solved. The achievements of the past, through the expenditure of effort and even life itself, have wrought magnificent benefits in the healing art to the human race. We surely can confidently march on to other victories!

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THYROIDECTOMY

WITH SPECIAL REFERENCE TO FACTORS CONCERNING MORTALITY

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The word "Thyroidectomy" is a surgical term and concerns itself more particularly with technic. The specialist is usually inclined to stress technic. It has always appeared to me that there were other factors which were of equal or even greater importance, and that to technic must be added judgment and preoperative preparation.

By judgment I mean the arrival at a conclusion as to the best procedure to follow, and to select the opportune time for carrying out that procedure in a way that will insure desired results.

Certainly thyroidectomy was an extremely hazardous procedure until preoperative treatment taught us to prepare the patient, and until the surgeon had developed a judgment which enabled him to select the patients when they were safe for operation, and taught him how much or how little to do.

I am going to enlarge the scope of my paper and include a discussion of the *reduction of mortality in surgery of the thyroid gland.* This will give me an opportunity to review all the factors concerned in a thyroidectomy instead of technic only.

The ideal in thyroidectomy should be no deaths, or at least a mortality of not more than one-half of one per cent. A thyroid death following operation is in practically every instance due to an error of judgment rather than some error in technic. The technic has been so definitely standardized that any surgeon of general experience should be able to do it. A perfect technic, however, will not of itself keep down his mortality. He can achieve the ideal only if he has a definite and detailed knowledge of preoperative or medical preparation, and uses it conscientiously in every case; *and secondly, if he has developed a correct judgment as to when to operate, and how much or how little he can safely do.* Unless he does acquire this judgment, and it can be acquired only as a result of clinical experience, his surgical technic may be perfect and his mortality remain high. The reduction of mortality is essentially a medical problem in the sense that what is done before operating determines the outcome.

There are three main factors concerned in the reduction of mortality. *They are in the order of their importance, medical or preoperative preparation, judgment, and technic.*

Before taking up the discussion of these three factors we must have a working classification of thyroids. The classification becomes the basis of the philosophy of treatment. For our purpose the only practical classification is to divide them into non-toxic and toxic cases. This classification is a clinical one only, is simple, and is the basis on which treatment rests.

The non-toxic patient requires treatment only because of malignancy, pressure, or for cosmetic reasons. When any treatment is needed it is always surgical.

Every toxic patient is surgical until proven otherwise. The medical treatment will decide whether it is or not, and in this connection it is well to remember that all surgery can hope to do is to remove tissue which is hyperactive. It cannot, so far at least, remove the cause of the hyperactivity or the altered secretion. Surgery is a form of symptomatic treatment. The hyperactivity is only one part of the symptom complex.

When a patient presents himself with an enlargement of the thyroid gland which is nontoxic, the examination must determine whether that enlargement is due to malignancy, whether it is producing pressure, or whether there are cosmetic reasons for its removal. The conclusions determine the treatment. If none of these factors are present no treatment is required.

If, however, the patient has symptoms of thyroid intoxication, with or without palpable enlargement of the gland, the question then is; what treatment, medical or surgical, offers the safest and nearest restoration to normal? This question will be correctly answered in every instance if the medical or preoperative treatment is carried out conscientiously, and if proper judgment is used.

The size of the gland does not indicate the treatment which will be the most successful. Some of the smallest glands are the most toxic, and the largest ones may not be toxic at all. Every surgeon has been surprised at the size of the gland after removal compared to its esti-

mated size during clinical examination. There are no reliable laboratory tests which definitely indicate whether surgical or medical treatment is best. *Nothing but clinical experience, and judgment based on treatment, is of much value.* The first thing to do before beginning treatment is to make a complete physical examination, including all the indicated laboratory tests. Remember, hyperthyroidism is a symptom and not a disease. Nobody knows what it is definitely due to, and in very few patients is it due primarily to the disease of the gland itself. The sympathetic system and the endocrines are involved as etiological factors. Hyperthyroidism is common in the psychoneuroses. Tuberculosis presents a picture closely resembling an early thyroid. Ovarian dysfunction and hyperthyroidism are closely associated. A diabetic may have a toxic goiter, and a toxic goiter may have a glycosuria which disappears when the hyperthyroidism is corrected. Varying degrees of increase in function are common in pregnancy. An active syphilis may be accompanied by a hyperactive thyroid. The acute infections, pneumonia for instance, may be accompanied or followed by an increase or perversion of function of the thyroid.

Difficulties of adjustment such as occur at the stress periods in the life of the individual at puberty, adolescence, and the menopause, and which are always associated with changes in the internal secretions, may be accompanied by a hyperthyroid toxicosis. What I wish to emphasize is the importance of a complete knowledge of the physical and mental condition of the patient before beginning treatment. The failure to recognize the importance of a complete knowledge of the patient is responsible for the fact that the Americans, who are particularly enthusiastic over surgical results, claim 40 to 90 per cent cures. I am sure those of us who review our surgical cases not only immediately after operation but one, two, and three years later will agree that eight per cent of complete restoration to normal is more nearly correct.

I have made the statement that preoperative or medical treatment determines whether or not the patient should be operated upon. Medical preparation for operation has already shown that at least thirty per cent operated upon five years ago did not need to be operated upon. The facts justify the statement that in the future fewer will be operated upon, in fact we will finally be forced to the conclusion that the mere enlargement of the thyroid gland accompanied by a hyperfunction does not of itself mean the thyroid must be removed. Thyroidectomy is repeating the history of oophorectomy twenty years ago, and of tonsillectomy in the immediate past.

Medical treatment by making the operation safe increased the number done. It is redeeming itself by teaching us that operation is not always necessary. No thyroid should be operated upon until medical treatment has been tried. It should be tried for two reasons: It will demonstrate that many of them do not need surgery, and it will make those who do safe operative risks. It is only fair to say that the medical treatment was evolved as a result of the preoperative preparation of the patient for surgery. We were forced to continue medical treatment when the patient could not or would not consent to surgery, and found a certain percentage got well without operating.

For the hyperthyroidism itself the three most commonly used agents for the restoration of normal function, or if that is impossible, the preparation of the patient for operation, are Lugol's solution or some form of iodine, digitalis, and mental and physical rest.

Lugol's solution is the basis of all medicinal treatment. How long a patient can take Lugol's or how long it takes to prepare for operation is a matter of observation and experience. Certainly the arbitrary statement that no patient should be on Lugol's for more than two weeks is incorrect. There is no way of knowing except by giving it and watching them. Some are worse after taking it for only two days. Some have been on it for as long as five years intermittently without any bad results, and without surgery. No patient should be given Lugol's unless he will consent to be under observation. The dangers should be explained to them. The average time is three to six weeks. They should be continued on Lugol's for two to four days after operation. I have not seen a post operative crisis since Lugol's came into use.

Refractoriness to iodine is an established fact, and is one of the principal indications for surgery. Some who do not improve on Lugol's will respond to iodine in some other form. Those who show no improvement on any form of iodine

may improve on dried extract of thyroid gland. The addition of ovarian extract especially in cases at the time of the menopause is of real value.

The dosage of Lugol's is not fixed, it depends upon the response and the toxicity. A reduction of dosage is advisable as soon as improvement occurs. A small dose after the initial improvement will sometimes keep them well. The average dose is 3 to 30 drops, three times a day. Potassium iodide, 5 to 15 drops, three times a day. Dried extract of thyroid gland, one or two grains, three times a day.

The use of digitalis in the treatment of hyper thyroidism is a matter of opinion. Some men hold that the tachycardia, since it is due to the over activity of the gland, will disappear as soon as that phase is controlled. Clinically digitalis slows the pulse and increases the rest period of the heart. It raises the blood pressure, which is usually low in these patients, by its action and improves the general health. The dosage depends upon the pulse rate and should be reduced as the pulse rate comes down. A pulse rate of 80 requires no digitalis. An ice bag over the heart in the severe cases with rapid pulse is of great value.

For the insomnia and restlessness, luminal, sodium bromide, or some other drug of that kind can be used.

The diet should be simple, nutritious, and satisfying, and in quantities that will permit the patient to put on weight. The hyperthyroid's metabolism is increased and he burns up more fuel than the normal. The stimulating food as a rule had better be omitted. To this group belong meat, eggs, tea, and coffee.

The most important non-medical factor in the treatment of these patients is to obtain complete mental and physical rest. One is as important as the other. It has been shown definitely that emotional stress and mental activity increases the internal secretions, including the thyroid. The onset of hyperthyroidism is often precipitated by an emotional shock, anxiety, fear, and apprehension. To obtain the confidence of the patient is the first essential. The public should be enlightened as to the present status of the treatment of thyroids. They still associate a diagnosis of goiter with a serious operation and little chance of recovery. It is better to reassure them and not mention operation until they are ready for it and have lost their great fear of it. It certainly is poor judgment to see the patient in the office one day and send him in to be operated upon the next morning. If that patient really needed an operation his chances of recovery are very much reduced.

Physical exertion or even ordinary exercise should be stopped. Dancing, athletics, shows, and excitement of all kinds should be omitted. The severely toxic patients should be placed in a quiet room with some one to take care of them who has plenty of poise and common sense. Restriction or prohibition of physical activities should be persisted in until all signs of cardiac decompensation disappear, the pulse is not more than 80, and the urinary output adequate.

I made the statement that surgical technic, alone and by itself, was not sufficient to achieve the best results and obtain the lowest possible mortality. I repeat the same statement concerning preoperative treatment, and emphasize it. A patient can receive the best preoperative treatment and meet with disaster because little or poor judgment was used in selecting the opportune time for operating. We all know that these patients have an up and a down curve in their condition. The only time to operate is when they are at the peak of their improvement, and before they are on the downward curve. Operate when they have received the optimum of benefit from medical treatment. The best time is when clinically it may be unnecessary; when they expect to get well, not when they fear operation. I do not mean the ordinary apprehension the majority of people experience when a major operation is contemplated. There is a vast difference between fear and apprehension. I would refuse to operate upon a patient who had no confidence in me. Confidence in the surgeon removes considerable of the risk of operating. *A thyroidectomy is never an emergency operation.* Wait until the symptoms of toxicosis are lessening as shown by a gain in weight, less tremor, and a pulse rate of not over 80, and their mental attitude is such that they approach an operation with the full expectation of recovering. In my experience the mental attitude is of the utmost importance, and the safest guide as to when to operate. They should all be in the hospital not less than three days before operating. This gives them an opportunity to become accustomed to the change in environment and to

hospital routine. To let them see and talk to patients who have been successfully operated upon, builds up their morale and is often the final factor in removing any remnant of fear which may exist. The psychic and mental make-up of the individual must be taken into consideration. It is of as much importance as his physical make-up. Routine mechanical care is not sufficient. The personality of all who come in contact with the patient is part of the treatment. Crile has definitely proven these facts with results that have been equalled nowhere else in the world.

Often the patient or relatives insist on an immediate operation and threaten to go elsewhere unless you agree. I am aware of the fact that they will have no difficulty in finding someone willing. I insist, however, that there is an opportune time and that the surgeon should fix the date, and not friends and relatives of the patient. I have, on a number of occasions, refused to operate because in my judgment the patient was not ready due to insufficient preparation. To operate on a moribund patient or because "she would have died anyway" is senseless.

All patients who are refractive to iodine should be prepared and operated upon, as well as those who find the medical treatment irksome, or those who for social or economical reasons find the restrictions impossible. There are three groups of patients it is inadvisable to operate upon. First in that group, are those suffering from a psychosis including the infective exhaustive psychosis, and particularly the psychoneuroses whether of the psychasthenia or neurasthenia type. The latter two are never sufficiently benefited to make it worth while risking your reputation by resorting to surgery. They make up a large part of the sixty per cent in statistics which are not returned to normal. This also holds true for the mild hyperthyroids complicated by or due to maladjustment to social and physical environments which cannot be corrected. The infective exhaustive group are seldom in condition to make them safe surgical risks. Another group it is better not to operate upon are those with an accompanying physical condition that cannot be corrected, at least to the point of making surgery a safe procedure. The prognosis of the accompanying condition should be considered when advising operation. To keep the mortality low you must pick your cases. The best men are doing it, and it is well to profit by their experience.

As to technic. I had no intention of giving the impression that technic was of minor importance. A technic which requires two hours for completion will have decided bearing on the outcome. Speed consistent with safety, and due to dexterity, and co-ordination of all assistance, or dexterity plus team work is the ideal.

Whether to remove one or both lobes at one time depends upon the patient's condition under the anesthetic. With the modern method of preoperative preparation both lobes can usually be removed. The pulse rate while under the anesthetic is a safe guide. With ethylene the pulse rate will increase 20 to 30 per minute during induction, and will come down to the usual rate for that patient under complete anesthesia. If it stays down the patient is usually safe. If, during the operation the rate increases, it is time to finish quickly or stop. An expert anesthetist is a valuable assistant in a thyroidectomy. Pay attention when she tells you the pulse rate is going up. Since the introduction of ethylene I see no advantage in local. The general anesthetic does away with the fear and tension which a local imposes on the patient. There is less shock with the general than with the local. I have had the experience of being obliged to stop the operation under a local because of the patient's agitation, and been able to go back a week later and complete the entire operation under ethylene without any difficulty. I prefer ethylene. Having the patient awake and able to talk during the operation is no particular safeguard as far as the recurrent laryngeal nerve is concerned. If you clamp before you cut you will know immediately by the change in the character of the breathing that the recurrent laryngeal nerve is involved. A peculiar stertorous breathing always occurs, and disappears when the clamp is removed. Your anesthetist will call your attention to it at once.

The usual method of removal is by the intracapsular method. I am of the opinion that the extracapsular or anatomical resection has many advantages over the intracapsular method. It is safer in that the structures can be seen and identified before cutting. There is less danger to the recurrent laryngeal nerve and the parathyroids. The objec-

tion that too much of the gland is removed does not hold. One can save a very small fringe along the trachea. The intracapsular method is supposed to offer more protection to the deeper structures along the trachea. It offers no greater protection and leaves to chance factors which we should be sure of. It also assumes that there will be no abnormalities of location. The recurrent laryngeal is not always where it should be. It has one other advantage in that by the extracapsular method the inferior thyroid artery is ligated extracapsular, and before giving off its branches it lessens the danger of a hemorrhage from slipping. If in addition the superior thyroid artery is ligated before beginning the removal of the gland the operation is almost bloodless and lessens the danger of pressure due to oozing after the wound is closed. Most men do not remove enough of the gland due to fear of injury to deep structures. The extracapsular removal permits of accurate determinations of how much is left. Very little is needed for normal function.

One other point. It has been demonstrated that in some cases the inter-arytenoid muscles are supplied by branches from the superior laryngeal nerve, and that cutting this supply accounts for the hoarseness in cases where it is definitely certain the recurrent laryngeal was not injured. This can be avoided by dissecting out the superior thyroid artery and cutting it very close to the capsule.

Summary: The reduction of mortality in thyroidectomy is essentially a matter of preoperative preparation, with the exercise of judgment based on clinical experience, and followed by a surgical technic which combines speed consistent with safety.

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THE HISTORY OF THE DEVELOPMENT OF PHYSIOLOGY IN THE UNITED STATES

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The history of physiology in the United States parallels in the earlier stages that of other branches of medicine. Garrison states that "there was no American medical literature to speak of until long after the revolution." Every student of medical history is familiar with the careers of such men as Morgan, Shippen, Church, Thacher and Tilton. Such contributions of value as were made by them were purely clinical and had little to do with the scientific progress of medicine.

Only two men of the colonial period made any contributions that might by the most generous interpretation be classed as physiological. Benjamin Franklin might properly be considered the first American to investigate functional processes. These investigations covered such diverse fields as refraction, sleep, deafness, nyctalopia, blood temperature and electrotherapy. It cannot be said, however, that any of his contributions exerted any great immediate influence on the subsequent progress of medical science.

Of considerably more importance was the work of Benjamin Rush. His graduating thesis at Edinburgh in 1768 was one of the earliest reports of experiments on the physiology of digestion. The following year he became professor of chemistry in the College of Philadelphia and later succeeded to the chair of the Institutes of Medicine in the University of Pennsylvania. This chair was founded in 1789 and first occupied by Caspar Wistar. In 1879 the title was changed to that of physiology. In point of continuous existence, therefore, this is the oldest chair of physiology in this country since there was unbroken succession down to the present occupant.

While Rush did not continue the investigations on digestion which constituted his first scientific effort, this early interest doubtless stimulated certain of his students to undertake investigations in this direction, as will be shown presently. His most important physiological investigation was on heat regulation. But his clinical investigations on insanity and yellow fever bear all the marks of a scientific mind and enable one to understand the brief flare of scientific activity at the University during the earlier years of the nineteenth century. He also made some contributions to anthropology.

In 1803 John Richardson Young graduated from the University of Pennsylvania, choosing as a thesis the subject of gastric digestion. Young was apparently the first American to use methods of investigation at all comparable to modern physiological procedure in that he em-

ployed animals as experimental subjects. As Meek points out, his experimental methods "remind one of the work done a hundred years later." He also experimented on himself and on a fellow student who was a regurgitator. While he was mistaken in concluding that the acid in gastric juice was phosphoric acid, a mistake probably more correctly assignable to the inadequacy of chemical methods than to the investigator himself, he was correct in concluding that acid is a normal constituent of the gastric juice and not a product of fermentation and that its function is to render food soluble.

This conclusion was confirmed by Oliver H. Spencer, a classmate of Young, whose thesis was entitled "Experiments and Observations on Digestion."

Two years later Thomas Ewell, a third student of Rush, graduated with a thesis entitled "Notes on the Stomach and Stomach Secretion." In the course of his experiments he performed what is believed to have been the first vivisection experiment on a dog in America. This involved isolating a loop of the ileum into which he injected boiled meat saturated with pig's gastric juice. The loop was replaced and after three hours again examined, when it was found that a third of the material had disappeared and the lymphatics were engorged. This type of experiment was unique in the annals of physiological investigation up to that time. For some reason, the stimulus supplied by Rush was ineffective thereafter. Young died a year after graduating and neither Spencer nor Ewell followed up their promising initial efforts. Physiological investigation was practically dead for the next thirty years.

Then came the brilliant investigations of Beaumont. Since these were the subject of an earlier paper before this body, they will not be detailed here. We need only emphasize that Beaumont's chief contribution, aside from the actual scientific facts evolved, was the demonstration of the possibilities of a new method of investigation, later to prove invaluable to modern physiologists. But Beaumont never trained any followers, never occupied a teaching position and consequently exercised no influence on the subsequent development of physiology in America, at least not until nearly fifty years had elapsed.

Closely paralleling the career of Beaumont is that of Charles Edward Isaacs, who graduated from the University of Maryland in 1832, spending the next few years as an army surgeon. Resigning in 1845, he opened a private school for medical students in New York, but a year later he became demonstrator in anatomy at the College of Physicians and Surgeons and finally Professor of Anatomy in the University of New York. There he carried out a series of investigations on kidney function that should place his name alongside those of Bowman, Heidenhain and Ludwig. Bowman's first kidney work was published in 1842 and apparently furnished the impetus for Isaac's work. He began by repeating Bowman's experiments but extended them to such a wide range of species as the frog, turtle, snake, alligator, fish, bird, mouse, rat, squirrel, cat, dog, raccoon, rabbit, hog, sheep, deer, elk, moose, ox, horse, black bear, rhinoceros, monkey, and man. As Bieter has remarked, "How many other investigators have made use of such an extensive and representative series of organs?"

Although Heidenhain is given credit for the first use of dyes in experimental kidney study, Isaacs had actually made use of a wide range of dyes some seventeen years earlier. His conclusions as to kidney function were, in general, similar to those of Ludwig. His two papers were published, however, in clinical journals with only local circulation and consequently attracted little attention in the scientific field, certainly much less than they deserved. While professionally an anatomist, practically all his work was functional in outlook. Like Beaumont, his direct influence on the development of medical science was apparently not great.

Of the group of isolated physiological investigators in America we must mention Bennett Dowler of New Orleans whose investigations on post mortem temperature rise, idiomuscular contraction, and on the nervous system were conducted along modern lines. He was a violent opponent of the Bell-Magendie law and consequently many of his investigations were subsequently discredited. Assistant Surgeon General W. Hammond made some careful observations on nutrition and metabolism and J. K. Mitchell, Professor of Medicine at Jefferson Medical College, published some important investigations on the heart.

The first full time professional teacher of physiology in America was Robley Dunglison

who as a young graduate in medicine from London was called to the University of Virginia in 1824 as Professor of Anatomy, Physiology, Materia Medica, Pharmacy and Medical History. As Oliver Wendell Holmes once remarked, he occupied not a chair but a settee. After nine years he went to a similar position in the University of Maryland and later to Jefferson Medical College where he remained until his death in 1869. He was of such a nature as to preclude undertaking experiments on animals to any great extent but he was a prolific writer, publishing such works as a "Medical Dictionary," and texts on materia medica, hygiene, medical practice, medical history and new remedies. His most important work however was a "Human Physiology" first published in 1832 and for many years thereafter the standard text on that subject. Previously Haller's text was the only one used extensively in this country. The influence of this work on physiology in Europe was largely duplicated by Dunglison's text in America.

Oliver Wendell Holmes also touched the field of physiology to a minor degree. He was Professor of Anatomy at Harvard but from 1847 to 1865 also gave lectures on physiology accompanied by some simple demonstrations. However he made no contributions nor did he exercise any particular influence on the development of the subject.

Of considerably more importance was the work of J. W. Draper, Professor of Chemistry and Physiology in New York University. Besides being a versatile student he made investigations of the physics of auditory and ocular phenomena, capillary mechanics and bronchial musculature function. His most important work, however, was a textbook first published in 1856 which bore the rather pretentious title "Human Physiology, Statical and Dynamical, or The Conditions and Course of the Life of Man." For many years this text was a standard in American medical schools and along with Dunglison's text was widely consulted by physicians. While neither of these men trained any teachers of physiology, their writings were of great importance to the medical profession. Draper's text contained a wide range of biological material. The parts devoted to pure human physiology were remarkably well written in consideration of the state of knowledge at that time, embodying a discussion of the relations of known physical and chemical laws to physiology, or what would now be termed general physiology.

In addition there were sections on anatomy and histology, sociological relations, the soul, dreams and nightmares, anthropology, cultural relations of races, biological bases of religion, comparative psychology, and a general dissertation on science. In fact he touched upon the whole gamut of human activity in relation to physiology.

A prominent contemporary of Draper was J. C. Dalton who graduated from Harvard Medical School in 1847 then spending some time in Bernard's laboratory. In 1851 he published his classical paper on the "Corpus Luteum of Pregnancy" for which he received the prize of the American Medical Association. The following year he assumed the chair of physiology at Buffalo. After two years he went to the University of Vermont, and, in 1855 to the College of Physicians and Surgeons in New York, now part of Columbia University, resigning in 1883 to become President of the institution, to be succeeded by John G. Curtis. During the Civil War he served as surgeon in the Army.

Dalton was one of the first to make use of the duodenal fistula in studying bile secretion. He also investigated thoroughly the glycogenic function of the liver and his results confirmed those of Bernard. To him must be given great credit for the final acceptance of Bernard's theory as against that of Pavy.

In addition to a text on physiology which largely supplanted those of Dunglison and Draper, he published a finely illustrated monograph on "The Topographical Anatomy of the Brain." He was the first teacher in America to illustrate didactic lectures with extensive animal experiments. As a result of this practice active antivivisection propaganda first appeared in this country. In reply to the attacks on him he published a classical monograph on "The Experimental Method in Medicine." However, at no time during his career did he undertake laboratory instruction of students.

Austin Flint, graduated from Jefferson Medical College in 1857. Previously he had assisted Dalton for some time at Vermont. After a period spent in Bernard's laboratory he became

professor of physiology at Buffalo but in 1861 he participated in the founding of Bellevue Hospital Medical College and was professor of physiology there until 1898 except for a period of army service during the Civil War. He then went to Cornell, where he remained until retiring in 1906. His investigations covered capillary circulation, metabolism and related subjects. In 1862 he isolated the substance later known as corprosterol.

In addition to original papers he published a five volume text on physiology, the first extensive work of the kind since that of Haller. A condensed single volume text was widely used until comparatively recent years.

One other important figure appeared in the pre-modern period, namely S. Wier Mitchell. Although he never occupied a teaching position in physiology, he has had a real influence upon the development of that science. As a trustee of the University of Pennsylvania, he stimulated an enormous volume of investigation, the results of which appear under 522 titles during a period of twenty years.

His first paper appeared in 1852 and dealt with the form of uric acid crystals. From then until his death he kept up a steady production of scientific articles of the highest grade of excellence and over a great variety of subjects. These included snake venom, nerve injuries, nutrition, the knee jerk, but perhaps his most important work was as a pioneer in the investigation of cerebellar function. With the exception of Beaumont, he is the only one of the group so far discussed whose influence persists to the present time. He was an enthusiastic exponent of laboratory instruction and must receive a large share of credit for the development of this phase of medical education in America.

Another physiologist of this period was Brown-Sequard. Meek suggests that "by virtue of an American father, two American wives and four extended visits to this country, we may claim part of his glory." In 1852 he began the practice of medicine in New York. In 1855 he became professor of the institutes of medicine in Virginia. From 1864 to 1866 he was professor of the physiology and pathology of the nervous system at Harvard. His research publications while in America covered investigations on reflex action, artificial production of epilepsy and on the pathways of the spinal cord. His indirect influence on the development of laboratory methods in medical schools was very great as will be shown presently.

In addition to the early departments of physiology already mentioned we should not overlook several other early foundations, in order that the chronological account may be complete. In 1843 a chair of anatomy and physiology was established in Cleveland Medical College, later Western Reserve University. This was held successively by J. J. Delamater, J. Gad, G. N. Stewart, J. J. R. MacLeod, and Wiggers. The University of Michigan established in 1850 a department whose incumbent was first designated as professor of therapeutics, materia medica and physiology, then of obstetrics and physiology and still later professor of anatomy and physiology. In 1877 the department attained complete autonomy.

But one of the true roots of modern physiological development is in reality to be found in the laboratory of Carl Ludwig in Leipsic. To this laboratory in 1869 went a young man who was destined to become the first of the modern group of American physiologists, and there came under the active influence of that greatest of all masters as well as that brilliant group of Ludwig's students such as Kronecker, Mosso, Lauder-Brunton, Lankester and Cyon.

Henry Pickering Bowditch was born in Boston in 1840 and graduated from Harvard College in 1861. Shortly afterward he was appointed second lieutenant in the First Massachusetts Cavalry and continued in active service until June, 1865, when he was discharged with the rank of major. He now entered Lawrence Scientific School, receiving, in 1866, the Master's degree under Jeffries Wyman, the comparative anatomist, from whom he probably received his first scientific impetus. Two years later he graduated from Harvard Medical School and, probably because of acquaintance with Brown-Sequard, who, it will be recalled, had just terminated his last visit to America and had returned to Paris, he followed the latter there but found that Brown-Sequard had no laboratory, so he entered that of Claude Bernard. He came also to some extent under the influence of Ranvier. After a short time he met Kühne and as a result of his persuasion went to Germany, finally entering Ludwig's laboratory. Here he carried out

his classic investigations on "Staircase" and "All-or-None" phenomenon of heart muscle. Here also he perfected the Bowditch clock, a new induction coil and the spring recorder for liquid flow. More important still he received the great scientific impetus that was to carry him through nearly half a century of productive activity.

After 1865, Holmes had relinquished the part of his duties relating to physiology to J. S. Lombard who worked in conjunction, for a part of the time, with Brown-Sequard. In 1870 instruction in physiology was taken over by W. T. Lusk, father of Graham Lusk, recently retired as Professor of Physiology at Cornell. In 1869 Charles W. Elliott became President of Harvard University. One of his first acts was to suggest that Bowditch should return and take up the work. Feeling that he was not yet fully prepared, he refused the offer. When Lusk, after one year decided to go into private practice, Dr. Elliott renewed his offer and Bowditch decided to accept. Accordingly, in the fall of 1871, he entered upon his duties as Assistant Professor of Physiology, as he used to remark "assisting himself." He had no laboratory and was at first practically alone in every respect. However, he soon created both an atmosphere and a laboratory, the latter more properly a laboratory of experimental medicine since the interests of those who were attracted there ranged through every field of biology from psychology to bacteriology. Here were assembled Charles S. Minot, Isaac Ott, J. C. Warren, O. K. Newell, W. F. Southard, William James and many others whose names are indelibly fixed on the roll of American scientists. Here also G. Stanley Hall began his investigations in experimental psychology.

In spite of his great influence and stimulating zeal Bowditch only inducted two students into the field of physiology as a profession, Lombard and Cannon. But he did send many into other fields of medical science, which at that particular stage was probably an equally important service. However there came to his laboratory men already embarked in the field who unquestionably were greatly influenced in their subsequent careers by the dynamic atmosphere which he created.

Cannon says that variety of interest was the keynote of Bowditch's scientific career, not only in his own personal investigations but in those of his students and collaborators. With Mitchell he believed that all branches of medicine should advance together and his activity was entirely consistent with that belief. He was always sympathetically interested in the problems and difficulties of his colleagues elsewhere, an interest which finally resulted in the formation in 1887 of the American Physiological Society.

He was one of the instigators of the four-year course in medicine. With Dalton he was a militant enemy of antivivisection and other forms of restrictive legislation.

His extra-scientific activities included membership on the Boston School Committee, Children's Aid Society, trustee of the Public Library, and Committee of Fifty on the Alcohol Problem.

He was perhaps the most widely honored American scientist up to the time of his death in 1911. Membership in learned societies and honorary degrees were showered upon him from European sources. His relations with European scientists of note went far to obtain better recognition of American scientific productivity in Europe.

Time and space do not permit a detailed account of his work. Wherever he touched the field he left an indelible impress. Scarcely one of his publications but is still important to the research worker as a fundamental starting point.

For the other root of American physiology, we must go back to the village of Arbroath in Scotland where in 1802 was born William Sharpey. This man was primarily trained as an anatomist but in 1836 was called to the new Chair of Anatomy and Physiology in University College, London. While he had no particular preparation as a physiologist, yet he made some noteworthy contributions on ciliary function. He had, however, visited Ludwig's laboratory for a time and there learned something of mechanical methods of demonstration. Several of his students have described how in the absence of a kymograph he used to illustrate its principles in his lectures by revolving his silk hat and at the same time moving his finger up and down so as to trace a line on its shiny surface. "My dear old hat" he always called it.

Out of Sharpey's laboratory came many of that brilliant group of biologists who initiated

the Golden Age of physiology in England. One of the most noteworthy of these was Sir Michael Foster. Sharpey had come to realize his own limitations and for some time had labored toward the creation of a chair of Practical Physiology, which efforts materialized in 1866 when Foster was elected to the position. One of Foster's pupils here was H. Newell Martin.

In 1870 Foster was chosen to organize the new physiological laboratory at Cambridge and Martin was invited to accompany him. In addition to his duties in pure physiology he also gave a course in Elementary Biology, for which his previous experience as Huxley's assistant admirably fitted him.

When Johns Hopkins University was organized, Martin, on recommendation of Huxley and Foster, was elected Professor of Biology, which title was changed later to Physiology. Martin assumed his duties in 1877. Thus Foster became the scientific grandfather and Sharpey the great grandfather of that extraordinary family of biologists that emerged from the Hopkins laboratories during the next 16 years. Martin's own scientific production was in line with that of Foster but nevertheless of such a nature as to demonstrate clearly the hand of a master in his own right.

He early established contact with Bowditch and their relations were most cordial. They collaborated in the formation of the American Physiological Society and seven of the 24 charter members were Martin's students.

In chronological order the most important of his students were Henry Sewall who assumed the professorship of physiology at Michigan from 1881 to 1892 when he was succeeded by Lombard who continued in this post up to 1923; W. T. Sedgewick, the sanitarian; H. H. Donaldson, whose work has been of such great fundamental importance to nutrition investigators; W. H. Howell who succeeded Martin; Frederic S. Lee who succeeded Curtis, Dalton's successor at Columbia; Geo. P. Dreyer, until lately Professor of Physiology in this University; Theodore Hough, for years head of the department and Dean of the Medical School at Virginia; Reid Hunt, still active as head of the department of Pharmacology at Harvard; A. B. Macallum, the pioneer in Canadian physiology; and Wesley Mills, for many years physiologist at Montreal.

When the Physiological Society was organized, Mitchell was first President and Martin Secretary. The latter served in this capacity until 1893 and retired without ever attaining the presidency. Ill health forced his retirement at the early age of 43 and he died three years later.

Mitchell served as President of the Society during three terms, Bowditch six. The latter was succeeded by Russell H. Chittenden. This fact is mentioned because it is so significant of the intimate relations between Physiological Chemistry and Physiology existing at that time. This subject is usually considered as an outgrowth of Physiology. As a matter of fact, in this country its development was largely independent, although if we trace back its geneology to its European source we find the collateral line of descent from the laboratory of Kühne in Heidelberg. Kühne in turn was trained under Virchow, Bernard and Ludwig. Because of his experience with Bernard he always evinced a strong inclination toward chemistry.

When Chittenden decided to go to Europe in 1878 with a view to preparing himself to develop more fully the study of the chemical nature of physiological processes he first selected the laboratory of Hoppe-Seyler in Strassburg as the site of his labors. But on account of the crowded conditions of this laboratory, he decided to go to Heidelberg. Kühne's interest in the young unknown American was immediately aroused when he recalled his name as the author of a paper on glycogen in muscle that had appeared in the German literature a short time before. Productive research in America was in those days a rarity.

A laboratory of physiological chemistry had been established in Sheffield Scientific School at Yale in 1874 and on his return to America after two years in Heidelberg, Chittenden was placed in charge and kept up a long career of research and training of research students so that practically every important laboratory in this country today in some way may trace its development to the influence of Chittenden. Until the formation of the Society of Biological Chemists in 1907, the two groups were closely associated in every way. Biochemists served as officers of the Physiological Society and published much of their work in the American Journal of Physiology. On the other hand a number of physiologists have served as officers of the Biochemical Society.

Between 1880 and 1927, the doctorate was conferred on 93 candidates in Chittenden's laboratory.

With the opening of the new University of Chicago, Jacques Loeb was called to organize a department of physiology. After ten years he was succeeded by G. N. Stewart, who in turn was followed by A. J. Carlson. From this laboratory has issued a steady production of investigations and investigators that has, in some respects at least, surpassed both of the older centers, Harvard and Hopkins.

While it cannot be said that the American Schools have produced many figures who compare in scientific stature with the great European masters such as Bernard, Ludwig and Foster, nevertheless they are attracting increasing numbers of students from other countries. In 1929, for the first time, the International Physiological Congress was entertained in America. The American laboratories are now generally conceded to be the best equipped materially and best supported financially. Whether this means that they will ultimately become the best equipped intellectually, depends on many intangible factors which cannot be evaluated nor discussed at this time.

When one surveys the entire field of research activity in physiology in America, two distinct general lines are apparent, superimposed on the older fields. One is a distinct trend toward biophysics, the other embracing studies of integration of the whole organism. In the latter field are to be found most of the important practical clinical investigations of a functional nature. It scarcely behooves us to attempt to prophesy as to the future results of these developments. But it is certain that the study of function in some guise has come to assume the place of primary importance in medical science.

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SPINAL ANESTHESIA IN GYNECOLOGY*

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At almost every important surgical congress of recent years, the use of spinal anesthesia has been discussed and the fact that there are still papers and reports being read on the subject demonstrates that there is still need for discussion and promotion of the idea.

Corning in 1894 performed the first lumbar puncture on a dog. In America the first operation under spinal anesthesia was performed by Matas in 1899. Babcock performed about 20,000 operations under spinal anesthesia.

Operating from 1921 to 1924 in the gynecological department of the State Hospital in Belgrade (Jugoslavia) under the direction of Professor Redlich and Dr. Jovanovich and Sibenic (Dalmatia), we used spinal anesthesia with novocain, stovain, tropococain in almost 90 per cent. of our cases. During this time we performed more than 700 laparotomies and vaginal operations. In 2 per cent. of these cases we had complete failure of the drug to anesthetize and in 4.5 per cent. of the cases we obtained incomplete anesthesia. We had no deaths which could be ascribed directly to spinal anesthesia. In some cases death followed Wertheim's operation for cancer of the cervix; such deaths, however, we did not attribute to spinal anesthesia since the effect of this anesthesia lasts only an hour or an hour and a half and since the operations had to be completed either under ether or a mixture of chloroform and ether 1 to 3.

The most frequent complication of spinal anesthesia was severe headache of the patients during and after operation. We also had fall in blood pressure; this was overcome by injection of adrenalin which was always kept ready in the operating room. Among other complications we noted nausea and vomiting, pallor and cold

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sweats, and general discomfort in the beginning of operations. These findings were present in about 60 per cent. of our cases. After about fifteen or twenty minutes the patient gradually recovered from these symptoms and the operation continued without further discomfort to the patient.

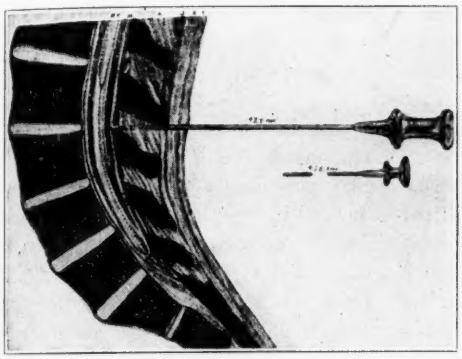

Fig. 1
From "Operative Gynecology" by Prof. Lipmann

Consent of the patient for spinal anesthesia was required. Patients suffering from tuberculosis, acute and chronic bronchitis, emphysema, asthma, heart lesions, arteriosclerosis, pyelitis, nephritis, acidosis, hypertension, cocain addiction and those who were heavy drinkers were strongly advised to be operated on under spinal anesthesia.

For an operation under spinal anesthesia with novocain, stovain, tropococain, the following technic was used:

The patient is prepared in the same way as for inhalation operation. One hour before operation, morphine sulphate one-quarter grain and atropine 1/150 grain are injected subcutaneously. The patient is placed in the sitting position. The assistant locates the crista iliaca and paints the skin over it with tincture of iodine. The spinal column for the extent of several vertebrae is also painted with tincture of iodine. A straight line drawn from the left crista iliaca to the right crosses the fourth lumbar interspace. This serves as our topographical point from which we can find the place we desire for insertion of the needle. The assistant or nurse stands in front of the patient and with one hand bends the head so that the chin touches the chest. At the same time the patient is asked to bow the spine. Then with the index finger or thumb of the left hand, the surgeon marks the point of insertion. He inserts the spinal needle into the skin in such a manner that it enters directly at a right angle to the axis of the spinal column. (Fig. 1.) The tissues are entered in the following order: 1. Skin and subcutaneous tissue; 2. fascia lumbodorsalis; 3. ligamentum supraspinale; 4. ligamenta interspinalia; 5. ligamenta flava; 6. dura mater; on going through this membrane we feel the characteristic snap and also meet with less resistance. Then we withdraw the stilet and enter 7. the arachnoidea. At this point we must watch for the escape of spinal fluid. If the fluid flows pure without any blood, then we take a 5 c. c. Luer syringe with novocain 0.25; we aspirate a few drops of spinal fluid so that we are sure that we are in the spinal canal and then inject half of the contents of the syringe (2½ c. c. of novocain solution); then we aspirate 2½ c. c. of spinal fluid and then reinject together with

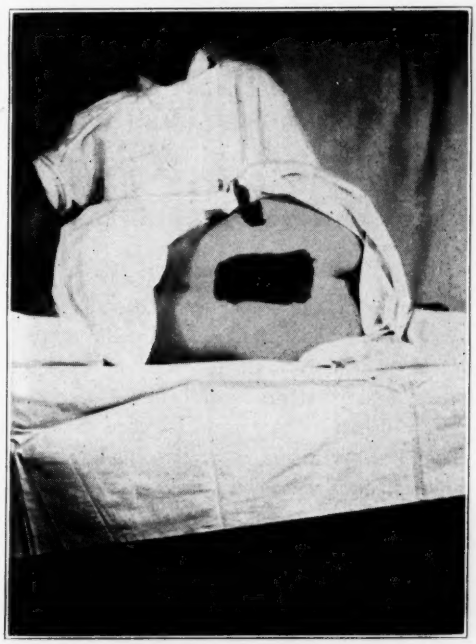

Fig. 2

the remaining novocain. After four or five minutes the patient is put in the Trendelenburg position.

Let us now trace the sources of technical errors. If blood trickles from the needle we wait until a few drops of blood have leaked out. If the blood continues pure, then the needle must

be withdrawn immediately since we have struck a spinal vein. But if, after several drops of blood, the fluid begins to clear, we wait until it becomes entirely clear and then inject the anesthetic. In case the needle is in the canal and the fluid does not flow out, which happens when the nerve fiber of the cauda equina touches the opening of the needle, it is necessary to withdraw the needle a little; if no fluid flows then, withdraw the needle entirely and re-insert it.

If the needle is not in the midline—a very frequent mistake—we strike the bone. In order to prevent this, gauge the direction carefully before insertion of the needle and maintain that direction. If the patient is not sufficiently recumbent, or if insertion is made much below the

Fig. 3

lower angle of the upper vertebra, the needle may strike the bone. The spinal needle must always be sharp; it must be made of steel and rustless, and it is practical before insertion to bend the needle to be sure of its good condition.

The post-operative course is usually smooth except for headaches with occasional vomiting. There are no gas pains or other discomforts so often met with in inhalation anesthesia.

During the past six years two important factors have been discovered, both of which have greatly simplified the use of spinal anesthesia and both of which have been of distinct benefit to the patient. We had been puzzled about the reason for the severe headaches after this anesthesia until L. F. Size offered the explanation that the headaches were the result of seepage of the spinal fluid (the normal amount of which is from 50 to 150 c. c.) after the spinal canal was punctured with a thick needle. To avoid this he suggested that a thin needle of 22 gauge be used. This led to unexpectedly good results with the headaches almost completely disappearing.

The second improvement in the use of spinal anesthesia was Dr. Pitkin's spinocain and here the difference in results between the former spinal anesthesia and controllable spinal anesthesia is without exaggeration as great as that between the use of chloroform and ethylene. Dr. Pitkin also injects ephedrin before injection of spinocain.

Spinocain consists of novocain 0.2; gliadin (the mucilaginous solution 0.3 content of wheat starch) which produces a viscid solution that will not diffuse with the spinal fluid but will mix with it; alcohol to produce a specific gravity much less than that of spinal fluid; strychnine sulphate .0022, stimulant of vasomotor constrictors; glucose 0.65, and normal saline solution 0.5 c. c.

The specific gravity of normal spinal fluid is 1.007 and the specific gravity of spinocain is 1.0005. For this reason the cardinal feature is to remember that the spinal puncture and injection should always be done with the patient *lying* on the side and that it should never be given with the patient in a sitting posture. (Fig. 2, Fig. 3).

I started the use of spinocain in Chicago two and one-half years ago and realizing the advantages of it, I abandoned the former spinal anesthesia entirely. I follow Dr. Pitkin's technic with the exception that I do not raise the cutaneous wheal to the site of puncture. I consider this impractical since it interferes with the correct insertion of the needle.

Due to the use of ephedrin the blood pressure is not affected. The ephedrin maintains blood pressure for over three hours while adrenalin maintains it for only twenty minutes.

I have found that nausea and vomiting occur very seldom and are of short duration. Shock is entirely excluded. Pallor and cold sweats never appear. The patient does not suffer from headache. Properly applied, the anesthesia is always successful, and in comparison with the former spinal anesthesia, the patient's frame of mind is noticeably good.

In Pitkin's statistics of the use of spinocan and ephedrin in 160,000 cases throughout the United States and abroad, no case is mentioned

of death or complications. Rygh and Bessesen state that with the addition of epinephrin and ephedrin "a fatal issue from respiratory or vasomotor paralysis becomes practically impossible." The deaths occurred when the old technic was used, where medicament was diffused in the spinal fluid and only few surgeons had no fatalities. Allessandri in 708 cases, Zahradnicky in 1,650 cases, Kummel in 1,400 cases and Jonnesko in his report of 615 cases had not a single death. The other surgeons were not so fortunate. Nonne and Demme had two cases of paralysis of the lower extremities under tutocain anesthesia; one of these patients died after sixteen months. Hohmeier sent out questionnaires to a number of hospitals and received forty-one replies reporting 2,400 cases of spinal anesthesia with stovain, novocain and tropococain with twelve deaths among them. Professor Forque in his study of the mortality figures compiled from statistics of seventy-five hospitals shows the mortality to have been 0.08 per cent. Marshak in 500 cases used spinal anesthesia with novocain and reported one death. McGlinn reports two deaths among the cases of his colleagues, one case after anesthesia with novocain with the aid of ephedrin, and the other with neocain. In both cases the effects of the anesthetic wore off and it was necessary to give nitrous oxide to complete the operation. After a few inhalations of nitrous oxide and oxygen, death resulted suddenly. Cotte had two deaths in 4,000 cases of spinal anesthesia with novocain. Barker, in 2,354 cases where stovain was used, had three cases of death. Pitkin witnessed a sudden death in the Boston Hospital from the injection of novocain into the spinal cord. He explains the death to have been due to toxicity of the novocain and not due to mechanical causes. Bier used spinal anesthesia first on himself and then on his assistant and later on his patients. In the early statistics of 400 cases in which he used tropococain there were two deaths. Dr. Arthur Curtis in his "Text-book of Gynecology" states that Spielmeyer, working with animals, found extensive degeneration of the myelin sheath of the nerve fibers in the periphery of the cord after stovain anesthesia. Dr. Loyal Davis also finds evidences of meningeal irritation and an increase in the cell count of the spinal fluid. Pitkin, too, found from 15 to 25 cells to the cubic millimeter when using stovain or apothesin. In using novocain—amyloprolamin solution, Pitkin did not notice an increase in the cells of the spinal fluid.

As to accidents of a technical character, Frank Lahney reports three cases of breaking of the needle during the injection, one of which was in his clinic and two in other places. In all three cases the needle was removed successfully with a right angled hemostat after a generous longitudinal incision.

Ogloblina reports another case of this nature. Spinal anesthesia was attempted on a patient for removal of the right kidney, but the needle broke and the operation was performed under inhalation anesthesia. Ten months later, after striking his back against a bench, the patient developed severe pain in the lower part of the chest. He went to another hospital and x-ray showed a broken spinal needle between the twelfth dorsal and first lumbar vertebrae. A rusty needle 3½ cm. long was found, which broke during its removal. However, it was completely removed and the patient was discharged in good condition.

Much has already been written about the advantages of spinal anesthesia over inhalation anesthesia. However, I do feel justified in comparing ethylene with spinal anesthesia, since I have met with only a few words of discussion of this subject in literature. The inventor, Professor Luckhardt, submitted himself to ethylene anesthesia over a hundred times, so the safety of ethylene is obvious. In the beginning of its use a few cases of explosions of theylene were reported; at present this is prevented by conducting away the static electricity. Dr. S. Heaney first used ethylene anesthesia on patients in Presbyterian Hospital in Chicago and pointed out its advantages over other inhalation anesthesia.

Aurelius reported regularity of pulse during anesthesia and undisturbed respiration.

Chauncey Leake demonstrated that ethylene with oxygen causes a gradual lowering of the blood P_h and during forty minutes' anesthesia it is not beyond normal limits.

But ethylene has its deficiency. This was first mentioned by Thomas Watkins at the very beginning of its use and that is that ethylene affords insufficient relaxation of the abdomen and in complicated cases of abdominal surgery we are forced to have recourse to ether.

Therefore, although ethylene is safer than any other inhalation anesthesia, it has proved insufficient in cases of complicated laparotomies and cannot take the place of spinal anesthesia in these cases.

In conclusion I feel that spinal anesthesia should be given in all cases where there is absolute indication for its use and that the former spinal anesthesia with novocain, tropococain and stovain should be replaced by spinocain, which is safe, does not cause complications or discomfort to the patient during and after operation.

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PRECIPITATING FACTORS IN MENTAL DISORDERS*

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In the presentation of this paper the position of the general practitioner, and not that of the psychiatrist, will be considered. When a patient has recovered from a nervous disturbance and has returned to the home, one of those best situated to guide him so as to prevent future attacks is the family physician. When a patient is well enough to leave an institution where nervous conditions are treated, advice should be given as to future activities by those who have been in charge of the case. This is not enough. In the opinion of the writer, guidance by one in actual contact with the former patient, is of greater importance in many instances than advice given perhaps years ago by one who could know little of the subsequent environment and problems. Even if the interests of the physician lie in fields other than psychiatry he can scarcely avoid being sought as arbiter in questions having to do with the continued mental health of the patient.

What can be said which will be of aid to the general practitioner in helping his patients to

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TABLE 1

SOMATIC PRECIPITATING FACTORS

All figures except the number of cases represent percentages. Decimals not included.

Class.	No.	None	Alc. & Drugs	Lact. Preg.	Infectious	Operations Traumata	Exhaustive Conditions	Menopause	Misc.
Dement. Praecox	100	63	2	4	17	5	9	..	..
Manic-depress.	100	50	4	4	18	6	10	1	8
Involl. Mel.	100	53	..	1	16	8	2	23	5
Psychoneuroses	100	30	3	4	22	19	7	6	25
Paresis	90	89	1	..	3	5	1	..	..
Senile Dementia	68	84	1	..	6	7	1	..	..
Total	558	369	11	13	82	50	30	30	38

avoid mental disorders? Obviously no panacea can be offered but if any attacks can be averted, consideration of the subject is well worth while.

Viewed in the largest sense, consideration of the prevention of mental disorders would have to include heredity and training of the individual. These features, although of great importance, lie outside the scope of this paper.

Two questions which if answered should shed light on our problems are: First, are there characteristics which stamp an individual as one who may develop a mental disorder, and second, what are the factors if any which may precipitate an attack?

With these questions in mind 558 cases were reviewed, divided as follows: 100 each of dementia praecox, manic depressive psychosis, involutional melancholia and the psychoneuroses, 90 suffering from general paralysis of the insane and 68 from senile dementia. The psychoneuroses included 25 each of hysteria, neurasthemia, anxiety, neurosis, and psychaesthenia. No criteria were used in the choice of cases[1] except that the classification was not questioned.

Several admirable papers have been written on the subject of precipitating factors in mental diseases but it is doubtful if they have received the attention from the profession as a whole that they deserve. There are conditions such as the drug, traumatic and post-infectious psychoses in which the exciting cause is believed to be known. What is true of the other psychic illnesses?

The somatic disturbances which preceded attacks of illness considered in this paper are grouped in Table I. In search for stresses occurring before the onset of attacks, the arbitrary rule was adopted of tabulating all factors which were present within four months of the onset of the nervous disorder. Some of these probably had no influence on the development of the psychosis. It may also be true that actual precipitating factors which the history failed to bring to light existed in some instances. The significance of the table lies not in any one figure but in the relative proportion of those in one group to another. Percentages instead of actual numbers were used so as to make comparison easier.

There is no intent to delve exhaustively into the significance of all figures. Grouping all disorders together infectious conditions, operations and traumata, miscellaneous factors, menopause, and exhaustive conditions occurring most frequently in the order named. In another group of cases the figures might well be different.

Among the psychic stresses shown in Table 2, death or illness of others closely bound to the patient, and financial difficulties due to such things as lowered value of property, loss of posi-

TABLE 2

PSYCHIC PRECIPITATING FACTORS

All figures except the number of cases represent percentages. Decimals not included.

Class.	No.	None	Financial	Domestic	Love Affairs	Deaths Illness	Sexual	Misc.	No Precip. factors	Som or Psych. Present
Dement. Praecox	100	66	2	5	10	6	..	13	32	68
Manic-depress.	100	44	17	5	1	24	1	17	24	76
Involl. Mel.	100	47	18	3	2	14	..	22	16	84
Psychoneuroses	100	54	4	8	3	14	2	21	4	96
Paresis	90	89	5	1	1	3	..	2	75	25
Senile Dementia	68	90	4	..	..	6	..	..	73	27
Total	558	390	50	22	17	67	3	73	225.0	375.0

tion or inability to make sufficient money, occur with relative frequency. The largest number of factors is grouped under miscellaneous since it was difficult to bracket these factors without making the chart cumbersome. Among them are various difficulties in making adjustment to new conditions; moving to a new environment, settling an estate, disgrace to some member of the family, and a variety of other situations.

In some cases more than one stress occurred before the nervous disorder appeared and in such instances each stress was chartered.

It may be noted that among the 90 paretics the onset of the metal disorder was preceded by some stress in 24.5 per cent. of the cases. Most of these stresses were probably of no actual relationship to the paresis. A few may have been since such relationship has been stated to exist. In 138 carefully selected female patients suffering from general paralysis of the insane, Hinsie[2] found the onset of the disease was conditioned in two patients by physical trauma and in three patients by psychical states.

Granting the possibility of some of the cases in this group of paresis having been precipitated by an acute stress the figures in this group might still serve as a useful gauge for the other groups where less definite factors than syphilis have prepared the patient for the ultimate break. This might also be true to an extent of senile

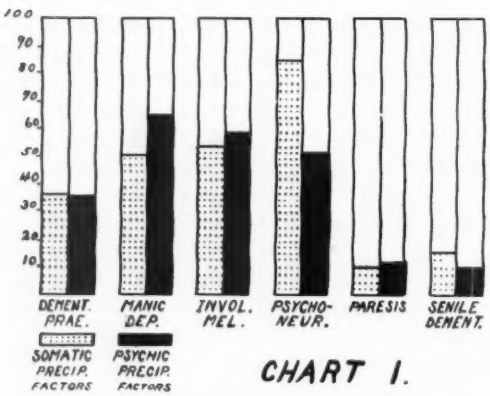
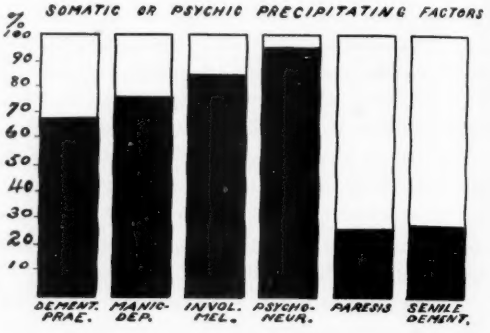


CHART I.

dementia although the cases in this group are past the age at which some of the strains might occur. In the involutional melancholia group the menopause, at least in time of occurrence, was associated with the development of the psychosis in 23 cases. It would perhaps be unfair to compare the figures for paretics and involutional melancholia unless the number for menopause is excluded. If this is done the percentage of cases of involutional melancholia in which the disorder was preceded by a somatic stress is about three times as large as for the paretic group.

Chart I shows the relative percentage of somatic and of psychic stresses occurring in the

CHART II.



various disorders. The most striking points in the chart are the not very great difference in number in each classification between somatic and psychic stresses, except in the psychoneuroses, and the definitely higher figures for the dementia-praecox, manic depressive, psychoneurotic and involutional cases as compared with those for general paralysis and senile dementia.

In Chart 1 each column represents the total number of somatic and of psyshic stresses preceding the different illnesses. Since in some instances there were several stresses in a particular case the columns may seem unduly high. This method seemed best to indicate the proportion of somatic to psychic factors.

In Chart 2 the somatic and psychic factors are combined but the columns represent not the total number of stresses but the relative proportion of cases in which some stress or stresses, somatic or psychic, preceded the illness, to those cases in the histories of which there was no mention of antedating stress.

One is reminded that Bleuler[3] and others consider dementia praecox an organic disease and one may wonder if that conception has a relation with the fact that the figures given for dementia praecox are less than for conditions commonly considered functional. The rather reserved personsality found more frequently in dementia praecox than in other cases might result in some patients failing to show outwardly the difficulties

in adjustment which would be quite obvious in the more frank manic depressive individuals. One would not expect this to be true of the somatic factors even though it influenced the known number of psychic conditions. Without attempting to draw conclusions in regard to the points just mentioned, the chart would seem to indicate that somatic and psychic stresses do play a part in the development of dementia praecox but perhaps to a lesser extent than of manic depressive psychosis, the psychoneuroses and involutional melancholia.

It has been stated in one of the foregoing paragraphs that the mere occurrence of a stress before a mental disorder does not prove the latter was in any way affected by the former. It is also true that a somatic stress may not be as potent in effect as the worry that accompanies it. Influenza or an operation may be most influential through the financial difficulties which follow in its wake. Consider the case in which a hysterical attack followed an appendectomy, where a cousin had died following appendectomy and ileus seven months before. One can readily see than the strain of our patient's illness may have been greatly augmented by the death of a cousin from the same illness. In a series of cases in which pregnancy, childbirth, lactation, trauma or a surgical operation had been assigned as of etiological signifiance, Rosanoff[4] stated, "whenever more detailed data are available it appears that these factors act not as physical causes, but through their psychical accompaniments." It is well to keep this view in mind although broadly considered the result may be the same whether the somatic factor precipitated a mental disorder directly or indirectly. The writer is inclined to think that somatic stresses may have more direct influence on the development of a psychosis than Rosanoff believes.

One might ask about the cases in which no obvious exciting cause existed. Rosanoff[5] stated, "the cases in which no causes are assigned do not differ essentially from others in etiological mechanism; it so happens that in their histories there is no spectacular event to be recorded as the cause."

Strecker[6] found in manic depressive psychosis and dementia praecox preceded by serious precipitating factors the heredity was better than where precipitating factors had played less part and that abnormal personality occurred with greater frequency in those patients whose mental illness came on without adequate precipitating factors. Strecker also stated that in his cases the great majority of recurrences appeared without serious precipitating factors. One would assume on the basis of these statements that the greater the constitutional defect the more apt an attack is to occur without unusual stress and, conversely, in the individual with fairly good heredity and a not unusual personality, a functional mental disorder is not apt to occur except following a serious precipitating factor.

Among the involutional melancholia and manic depressive cases there were quite a number in which a history of previous attacks was given. Figures relating to former attacks are not included in the table here presented. In some instances the history of a disorder which occurred years ago was not sufficient to say whether or not a stress preceded it. Tabulation of stresses which were mentioned in the histories shows that in the involutional group five were of similar character and eight were dissimilar for the different attacks. For manic depressive cases sixteen of the stresses were similar in type and 28 were unlike the factors which preceded former attacks. Considering the many stresses faced by mankind the number of similar factors which have preceded a mental disorder in one individual suggest, not specificity of precipitating factors per se, but that there is some indication from a study of previous precipitating factors of what may be quite likely to lead to another attack if the factor recurs.

Strecker[7] states that in manic depressive psychosis where the initial attack was preceded by serious exciting factors, later attacks were apt to show the same type of apparent causation.

Thus far this paper has dealt largely with figures and tables since it seemed best to show some basis for the ideas expressed.

There is much food for thought in the concept that a social, domestic or occupational situation may precipitate an illness even though the illness be of functional character. The fact that the concept is not a new one does not lessen its importance. There is still a tendency for the laity to think of illnesses and causes of illness only in such terms as inflammation, tumor or hemorrhage. Something of the old belief, that mental activities are spirit-like and apart from physical laws, exists. Work such as that done by Lillie[8]

who showed that a nerve impulse is a chemical and electrical phenomenon, and the fact known of the relation of emotional states to bodily changes help one to think of such experiences as deaths of relatives or an attempt to adapt to a new unfamiliar environment, as producing profound physiological changes in the patient even though many steps in the physical changes which occur in these reactions are not known.

With such ideas in mind one appreciates the need for evaluating psychic traumata more keenly than if he kept only in mind a number of charts and figures. For the youth one would advise wider experience and new endeavors but for the individual in whom a tendency to develop a mental disorder has been demonstrated by the actual occurrence of a previous attack it would seem wise to attempt to gauge his resistance and to avoid stresses which experience has shown are liable to cause trouble.

It is obvious that many stresses cannot be avoided. One cannot choose whether or not a parent will die nor arrange that financial difficulties come only to those who can weather them. Yet a number of case histories describe stresses which might have been avoided.

A review of the precipitating factors found in the cases used as a basis for this paper gives the impression that while it would not have been possible to avoid many of the stresses, there have been instances where the stress and the mental disorder which followed might have been avoided had the danger of attack been known and care used to prevent difficulties. Such situations as the following might have been prevented: A woman with no business training being made executrix of the husband's will and having to manage his financial affairs; a man of advanced years going into a new business without any experience in that line; a housewife, whose interests and activities had been confined to domestic life on a farm and who had not shown ability to adjust to new social conditions, moving to a new home in town. In quite a number of instances a situation seemed to be a decided strain because it necessitated a new type of endeavor in a new environment by one who lacked training or experience in other situations of similar character. A knowledge of the individual's interests and adjustments in the past, the vigor and ease with which social, domestic and financial situations are met should be a guide as to types of activities to avoid.

DISCUSSION

Dr. Frank P. Norbury (Jacksonville): I have been interested in Dr. Clark's statistical data as he has compiled them. His work is in keeping with the observations of those who have followed psychiatric experiences for a length of time. There have been some very unique features regarding the precipitating factors, unexpected in this economic depression which, as we know, is universal and world-wide. A new feature to us, at least, has been one that has been interesting, and that is, that the number of men patients coming into the sanatorium is in excess of the number of women, while in all our previous experience of nearly forty years, we usually have had an excess of women. But this winter and following the usual increase in the fall—and I think it is continuing right along—we are finding that the men are the ones who are, by reason of circumstance and experience, being bowled over by these depressions. After that, the precipitating factor of which the Doctor has spoken, influenza, or some other allied experience, is sufficient to produce mental disorder. In the background, however, is this emotional stress, incidental to adjustment in meeting the situations in life under these economic depression conditions.

I have noted for a good many years that if a tornado passes through a certain part of the state we will very likely, with the next few weeks, have a patient from that neighborhood. Take for example the tornadoes at Murphysboro and Charleston, we had patients, the result of those horrifying experiences. Take a fire or any local disturbance that has in some way reached certain individuals in regard to their emotional reactions to the experience, and sooner or later we will have one or more individuals who show some emotional disturbance, either profound or mild in nature.

Then we have exhaustion cases that come along in season. Perhaps, many of you know that I have outlined "the seasonal curves," in mental and nervous disorders. Certain seasons, notably spring and fall, are climatic factors, as part of precipitating causes. A few years ago I used to note what I called our "schoolteachers' month," which was May. After the close of the year's work, many teachers by reason of excessive winter conditions or school conditions, developed an exhaustion of one kind or another.

Dr. Charles F. Read (Elgin): Mr. Chairman and Members of the Section: This has been a most interesting paper, a scholarly paper, and has presented the subject of precipitating factors in a very clear manner.

The charts as shown by Dr. Clark were unfortunately not on the screen long enough for us to fully digest all that they represent—this immense amount of research and investigation into family difficulties and various other stresses, not to say anything of the attempt to discover what physical strains the individuals have been subjected to.

I do not know that this is the place—in a general

meeting of this kind—to enter into a more or less specialized discussion of Dr. Clark's paper.

I might say a word, however, about dementia praecox or, as we like to call it now, schizophrenia—not because it is a mouthful to say, but because it does represent something a little different from our old conception of dementia praecox, that meant in Kraeflin's time, a disease syndrome which went on in most cases to mental decay.

We find schizophrenic episodes or, if you will, mild dementia praecox episodes, occurring in many individuals who perhaps need not even be committed to sanitariums, such as Dr. Clark is connected with. Perhaps their disorder is never really recognized. They have some sort of a period of disordered activity and behavior and after that are perhaps not so good as they were before, but get along somehow or other.

One wonders, in view of the facts that Dr. Clark has mentioned, if there is not a general toxic background to dementia praecox, if we are not going to find some day that these individuals, although they are constitutionally inferior, are also suffering from some form of chronic toxemia. Perhaps they have suffered even in the uterus from toxemia in the mother; then, given certain stresses and strains, or even without stress and strain, they go under in a most surprising way. We find in involutional melancholia, as the doctor pointed out, that it does occur in women at the time of menopause and also occurs in men at the time of masculine climacteric, when the endocrine glands are losing their efficiency. Here is a subject for considerable thought and perhaps considerable therapy when we know more than we do about these things, and perhaps when we have hormones that we can rely upon better than we can at present.

There are also many factors that are hidden that we cannot bring out in short discussions, such as Dr. Clark's, fears that have arisen upon the basis of child experiences which come to a climax in adult life or when the individual is faced with an unusual stress or strain, or perhaps only with an experience that most people go through with very normally, as, for example, in the period of adolescence, a time of sexual readjustment or at the time when they should separate from the famly life and become individual entities, as it were. And again, when it comes time for marriage, we find these individuals fleeing from the idea of marriage, per haps because they are primarily homosexual or because of early unfortunate sexual experience or because of adult inefficiencies and what not; or because they have had fathers who have been brutal and domineering, or mothers who have fed them with too much security. They have relied too much upon the mother. They cannot bear to separate themselves from her and when the time comes for this separation to take place they are at a loss as to what they may do.

Dr. S. N. Clark, Jacksonville (closing discussion): There is very little that I want to say. A statement that mental disorder can be avoided seems to me rather pretentious, and my belief is that many times it cannot. I do believe, as stated in the paper, if one realizes the importance of strains—and I hope the paper brought out their importance—that one can acutally avoid some attacks.

There is one thing that I think is quite important. I have been impressed many times with the fact that there is not just one stress, but rather a series—for example, an infection now, an operation in two or three months, some psychic disturbance two or three months after that, and finally it seems that the resistance has been lowered to a degree that does not permit the usual type of mental functioning.

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THE POST-OPERATIVE PATIENT*

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To worry or not to worry about the patient's present condition appears as an uninvited question at some time or other in the post-operative course of many cases.

Were surgery an exact science, worry would be absent, because the prognosis would be certain and exact as in controlled experimental conditions. Our knowledge as to the prognosis of any given case complicated by an undesirable symptom, is based chiefly on a statistical percentage of probabilities. The latter conclusion, in turn, depends on the surgeon's personal experience, and his knowledge of others' experience gained through personal contacts and the literature. Our first thought, therefore, is the question as to what usually happens, and we gain comfort or the contrary from the answer. This knowledge, in itself, is indisputably valuable as an absolute factor, but becomes only relatively valuable when practically applied to the indi-

*Lecture to clinical clerks on the surgical wards.

vidual case in hand. It is this practical application which is important.

How is the patient?

This frequent question by the surgeon of his associate, assistant, interne, or nurse, immediately brings before the mind's eye a picture of the patient in bed in various degrees of postoperative reaction. The answer should be an intelligent attempt to communicate to the questioner the appearance in general of the patient, a first impression, followed by more details as to symptoms and findings, and finally a conclusion as to the general present trend and prognosis. This mental picture is complete, proportionately dependent on (a) one's powers of observation, (b) experience, (c) intelligence, (d) knowledge of items to look for, and finally (e) judgment in evaluation of symptoms and findings. These arbitrary divisions are, of course, interrelated.

To detail the above items, we may begin with a consideration of what is meant by the powers of observation. In recent years we have been chided by various psychological tests to attempt development and training of these powers, as in the experimental looking at a show window for a given time, and then writing down the articles remembered. It is no doubt true that we see more details when we consciously look for more. In this direction we can be trained, as witness our actual learning to see and differentiate a nucleus in a cell when first taught to look, see and observe through a microscope. More pertinently, we can be taught to look at (some wipe) a patient's tongue and see evidence of early dehydration.

Experience gives us the means for comparison of the patients' conditions or of individual symptoms. For example, previous knowledge of how many other operatives' tongues look, will give us a basis for comparing the degree of moisture of this particular tongue. We are thus able to state whether a symptom or finding, e.g., state of hydration, is excellent, good, fairly good, fair, poor, or bad. Experience therefore gives us a background for comparison and lends weight to our use of the comparative descriptive adjective.

Intelligence not only includes powers of observation and experience, but also the generous use of common sense in an examination. Machine-like examination in the process of detailed observation may be ill-timed. For example, it may prove embarrassing when looking at the tongue to voice a conclusion of good hydration and overlook ice pellets in the nurses' teaspoon. To turn the exhausted patient and remove bandages in order to determine the differences in tactile fremitus may be part of an examination which is thorough, but not necessarily of one which is intelligent.

A knowledge of items to look for comes through training. The list varies with the case and may be inexhaustible. No attempt will be made here to be complete. A first impression of the patient's general condition is often times forced upon the observer. The face is the first object of notice and may well be the only one necessary upon which to base an intelligent report of the operative's condition. Begin with the expression of the face, which usually means that of the eyes. We note whether the lids are wide open, whether the eyes are alert and bright, and whether they follow the visitor as he moves. Such a description immediately conveys to the experienced physician a definite condition, especially if contrasted with the eyes which are half closed, dulled, and rolled upwards. The sclera will be the first tissue to show icterus. The general facial expression may be happy or anxious, with many fine shades of indifference. The cheeks may be drawn and sunken, or full and smiling. The nose is peaked or otherwise. The color may vary from the literary ashen and grey, to a pink flush. The color of the ear lobes and lips is an important clue to the state of the circulation. Even the presence of a woman's rouge reveals her attitude; its absence, her miserable indifference to male's appraisal. An icebag on the forehead is not, as a rule, a happy observation. The voice may indicate not only weakness, but recurrent laryngeal nerve insult as in operations on the neck. Hemorrhage after a thyroidectomy may be revealed first by tracheal pressure and cervical swelling.

With the bed covers still untouched, dyspnea may be observed. Respiratory embarrassment postoperatively may be as easily due to diaphragmatic irritation from the abdominal side as to pulmonary pathology.

Massive collapse of the lung is recently diagnosed more frequently probably because our attention is called more often to its occurrence as an early postoperative complication. Cardiac trouble, pneumonia, pleurisy, asthma, lung ab-

scess, and empyema, are more common thoughts in connection with dyspnea. The presence of a cough is news at least interesting if not disturbing to the surgeon. A look at the sputum cup is always worth while.

The powers of observation may be extended to the use of the observer's nose. The odor of the sputum or of the vomitus may be noted. Although probably disturbing to the surgeon's aesthetic sense, the olfactory evidence or flatus or of a recent bowel movement may be even a source of pleasure in a threatened postoperative ileus. The earliest, although not a pathognemonic indication of an impending fecal fistula may result from the odoriferous activities of B. coli in the wound discharge.

The abdomen is watched carefully. The absence of distension, a soft, relaxed abdominal wall, and one which is not tender is always a source of gratification. The distended abdomen should be examined for tight bandages, or stretched adhesive, tympany, stomach outline, fluid, evidence of peristalsis, and bladder distension. Herniotomies should be noted for scrotal enlargements. The wound itself may be reddened, puffed, unduly tender, or show stitch irritation. The dressings should be observed for the type of discharge. The possibility of the occurrence of a fistula should not be overlooked. A look at the wound usually suffices—undue palpation should be avoided. In fact, with absence of complaints frequent disturbances of the dressings are unnecessary.

So far as the general condition of the patient is concerned, a study of his physiological reactions is important. The nurse's chart is sufficient for these determinations. The gastro-intestinal tract may be upset only sufficiently to affect the patient's appetite. In fact, the quantity of the breakfast is a delicate indication of the gastro-intestinal state, which in turn is quite an accurate index of the patient's general condition. Nausea in its various intensities to the point of vomiting is more of an obvious and gross disturbance. Gastric ileus must be considered. Hiccoughing is indicative of diaphragmatic irritation and is an unwelcome symptom.

Distension is intimately related to peristalsis. The normal functioning of the gastro-intestinal tract as evidenced by absence of nausea, the passage of flatus and stool, is all-important after laparotomy.

Similarly, the activities of the urinary system should be noted. Frequency, obvious hematuria, dysuria, involuntaries, and retention, are symptoms recorded on the nurse's chart.

There is not usually a great deal wrong when the record reads temperature 98.6, respirations 18, pulse 70, appetite good, and patient comfortable. A normal morning temperature, however, may be no indication of last night's temperature, or of the coming evening's temperature, as in the hectic curve type. Fever directs attention first to the wound itself, the operative field, the peritoneum, throat, and upper respiratory tract. Other sources are numerous.

Finally the pulse may be briefly discussed. Its character is to the trained palpating fingers of highest importance. The tell-tale qualities almost subconsciously noted are probably force, compressibility, rate and rhythm. The nurse's note as to irregularity of pulse as frequently refers to the rate as to the rhythm, and this point when charted should be questioned. A rising pulse rate may be the earliest sign of hemorrhage.

Probably no finding is as capable of miscalculation in the general judgment of symptoms and signs as is the pulse if taken by itself. In an impression as to the general trend and prognosis, the pulse must be considered as only a part of the detailed picture, although none the less an important part. The pulse in itself may be imperceptible and unaccountably fast in a patient whose general condition, as evidenced by other observations, is really good. On the other hand a slow, good quality pulse frequently exists with impending generalized peritonitis as in an early ruptured peptic ulcer. A prognosis based on the pulse alone must be guarded against.

Judgment in the evaluation of symptoms and findings is intimately bound up with experience and intelligence. It is interesting to note in this connection the great difference in the mental attitude of even the most conscientious, intelligent interne towards a recent operative as compared with his reaction with his own early private surgical case. As an interne, he accepts and reflects almost wholly the attitude of his attending man towards the case. If the attending surgeon shows no anxiety about a rise in temperature, the second day postoperatively, then neither does

the interne. Such a rise is more or less a matter of course—a natural reaction. A like rise in temperature following a similar operation on his own private case may frequently be a cause of great perturbation with many grave thoughts as to the outcome, even leading to sleeplessness—on the part of the young surgeon. Only curb-stone consultation may serve to allay his fears.

On the other hand, insufficient weight given to a rapid pulse may cause a hemorrhage to be overlooked, just as an acute ileus may be unrecognized early because of negligent attention to distension. Generally speaking, however, the young surgeon is more prone to exaggerate the gravity of a sign than to minimize its importance.

As to the expression of an opinion regarding prognosis it appears that the greater the experience on the part of the operator, the more guarded is the prognosis. It has been the unhappy trial of every surgeon to see the rarest complications in the simplest of surgical conditions, as well as the unexpected perfectly uneventful convalescence in cases perspired over at the operating table and apparently headed for certain trouble.

Returning to our original postulate, practical application of our knowledge becomes simply common sense in our general evaluation. This wisdom is a progressive evolution as it becomes rounded; and our judgment matures as our powers of observation increase and become keener. It is in this connection that ward rounds and patient contacts are invaluable, and supplement lectures and book knowledge.

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ATYPICAL SCARLET FEVER*

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The discussion of an abnormal condition necessitates the knowledge of what constitutes the normal. So in a study of atypical scarlet fever a rapid review of an ordinary case may not go amiss. Furthermore, in order to understand these atypical cases one must consider the etiological factors involved.

That a streptococcus was associated with this condition was held for many years, and it was the Dicks who finally showed—experimentally—that a specific, hemolytic, toxin-producing streptococcus was the causative agent. This toxin when injected into man will produce a typical attack of scarlet fever. In minute doses it will prevent the disease—this is our basis for active immunization; while if injected into an animal such as the horse, it will produce an antitoxin which is used for passive immunization and treatment.

Scarlet fever, typical or atypical, is a disease primarily of early childhood, the curve reaching its apex about the 5th year. In Illinois the lowest number of cases occur during the summer months; there is a gradual increase until the peak is reached in mid-winter.

The character of the disease has changed greatly and in recent years it has been milder in nature. It is these mild cases that constitute the greatest number of atypical scarlet fever. In the United States from 1913 to 1923 the mortality declined about 60%.[1] In Illinois the death rate has decreased from 98.7 per 100,000 population in 1860 to 2.3 in 1927. Similar changes have occurred in other places. A statistical study in England[2] of 21,290 cases from 1895 to 1914 the records and clinical observations of which were supervised by one man, Dr. E. W. Goodhall, revealed that the fatality rate during 1910 to 1914 was only 30% of what it was during 1895 to 1899 and that serious complications were definitely decreasing.

There was a gradual decline both in morbidity and mortality for Illinois since 1925 with a sharp rise in 1929 to 17,298 cases against 12,355 cases in 1928, an increase of 4,943 cases.[3]

In Chicago there were reported 4,335 cases in 1928 with 77 deaths—a death rate of 2.3 per 100,000. There was a marked rise in 1929 and 1930. In 1929 there were 7,945 cases reported with 164 deaths and in 1930, 9,599 cases with 201 deaths, a death rate of 5.9 per 100,000—an increase of over 250% from the 1928 low. This year up to November first there were reported 7,071 cases with 160 deaths. It looks as though this year's figures will be close to those of 1930.

Outside of diphtheria and pneumonia, scarlet feved has caused more deaths in Chicago in 1930

*Read before the Irving Park Branch of the Chicago Medical Society November 24, 1931.

1. A. L. Hoyne: The prevention of contagious disease, Chicago Medical Society meeting November 13, 1929.
2. Foreign Letters: J. A. M. A. 93: 1235.
3. 13th annual report of the Illinois Department of Public Health.

than any other acute infectious disease. In the same year it has caused 17 deaths more than typhoid, smallpox, measles, whooping cough, meningitis and polio combined.

At the present time one of the greatest factors in preventing the spread of scarlet fever is early diagnosis and recognition of the mild atypical cases. I believe that the prophylaxis of scarlet fever in the next few years will occupy as great a role as diphtheria has in the past.

The symptoms vary depending on the virulence of organism, the susceptibility of the host and the amount of immunity he possesses. Toyoda[4] and his collaborators working with new and old strains of hemolytic streptococci were able to produce scarlet fever in humans with the new strains but not with the old ones.

We have no simple method, as far as I know, to determine whether a scarlet fever patient or carrier harbors virulent or avirulent streptococci in his nasopharynx or discharges.

We know that following a case of scarlet fever the organism will disappear in most cases at the end of the quarantine period. In recent transactions of the Chicago Pediatrics Society the scarlet fever patients and carriers reported on by Drs. Peacock and Blatt were negative for hemolytic Streptococci at the end of 28 and 20 days respectively.

We also know very little about the susceptibility to the disease. The number of people susceptible has been variously estimated between 25 and 50%.

The hemorrhagic type of scarlet fever occurs most commonly in enfeebled children. Perhaps the lowered resistance here is a factor.

In the tropics scarlet fever is of rare occurrence. An editorial in the Journal A. M. A. of August 30, 1930, discusses the subject and various theories for this tropical insusceptibility are given. Some believe that climatic conditions are responsible for this. The theory is, that due to the low carbon consumption for body heat in the tropics, the metabolism of fat differs, so that fatty acids become available for the neutralization of bacterial toxins. Others believe in some hereditary factor—the so-called maturation immunity of some immunologists. Still others believe it is due to mass immunization. The fact that during an epidemic of scarlet fever in 1872 in the Faroe Islands, where no case had been known for 60 years, 78% of the entire population developed the disease plus the low figures for susceptibility now obtained by the Dick test and confirmed by clinical experience, would certainly suggest that the immunity in some of our population at least must be due to subclinical infection with the disease virus.[5] The question arises, are the atypical mild cases that we see the result of partial immunity by contact with scarlet fever cases or carriers. I believe this is so.

Scarlet fever may be so mild that physicians may never get to see the patient. The severity of the onset usually corresponds to the severity and subsequent course of the disease. The ordinary case has an abrupt onset accompanied by vomiting, high fever, and sore throat. The rash appears usually within 48 hours. With this combination—fever, vomiting, sore throat, and rash in a susceptible patient who has never had scarlet fever nor was immunized against it, one need not hesitate to make a diagnosis of scarlet. Before the appearance of the rash and during the first day or two of its manifestations the characteristic circumoral pallor and pinched white nose with flushed cheeks is rarely present in any other disease.

The rash which first appears on the chest and then spreads over the entire body is characteristic in that it has 2 elements in its makeup: First, a general erythema or flush and second, a punctate reddening blending into the erythema.

The fever which is usually high persists with slight morning remissions, gradually declining with the disappearance of the rash.

Vomiting is one of the most constant symptoms and is very often present even in the very mild atypical forms of the disease.

Other signs present are: The generalized adenopathy, the strawberry, or strawberry-and-cream tongue as a result of the enlarged red tongue papillae protruding through the white coating and later the raspberry tongue as the coating disappears leaving a raw tongue surface with its enlarged papillae. Marked transverse lines at the bend of the elbow may occur.

Desquamation begins after the disappearance of the rash and fever. It usually begins about the neck and chest; the hands and feet being the

4. Toyoda, T., Moriwaki, J., Futagi, Y., and Kuroi, C.: Scarlet Fever: Results of experimental research. American Journal of Diseases of Children 41:1009 May, 1931.

5. Aycock, W. L.: Immunity in Virus disease: Journal American Medical Association 97:1199 August 24, 1931.

last to peel. The process is usually complete 4 to 5 weeks after the onset of the disease.

Among the atypical cases of scarlet fever the mild forms are the most difficult to recognize. In some of these cases the rash may be so slight as to be scarcely perceptible. In other cases the rash may only last for a short time, and unless the patient is seen during that particular time one naturally misses the rash. I sometimes wonder if many of these so-called cases of scarlatina sine erythema are not cases with rashes of short duration. In school children during epidemic season we often see such cases, where following a history of sore throat, vomiting and fever, but without any noticeable rash, the child will show desquamation and severe complications such as nephritis and chronic otitis media may follow. On the other hand we have seen mild cases with no other symptoms except the rash or vomiting. Such cases followed by desquamation at the usual time and other cases of scarlet fever either preceded or followed these so that there was hardly any question of the diagnosis. I wish to stress the point that lymphadenitis and nephritis are more apt to follow the mild case, and these may be the first symptoms leading to a diagnosis. That these mild atypical cases are difficult to recognize is very evident. The intradermal blanching test with scarlet fever antitoxin can be used for diagnosing a doubtful rash. However, should the case be very puzzling the patient should be kept under observation in order to prevent the complications which may follow these mild atypical cases as well as to prevent the spread of the infection, unless repeated culture for hemolytic streptococci prove negative.

Malignant scarlet fever is another atypical, very toxic, but fortunately, rare type of scarlet. The disease sets in with very high temperature which may rise to 107 or even 108 degrees, accompanied by marked restlessness, delirium and coma. Diarrhea and vomiting are the most prominent symptoms. The patient usually dies within 24 to 36 hours so that the rash hardly has time to develop, and if it does appear it is scattered and indistinct.

The hemorrhagic type, mentioned above, occurs commonly in sickly children. Petechiae appear in the erythematous rash and gradually extend until the entire body is involved. There is also epistaxis and hematuria. Death may occur in 2 or 3 days.

We have the anginal form, in which the throat symptoms predominate and are very severe leading to necrosis and sloughing of the throat tissues. A membrane is present and the clinical picture is that of a malignant diphtheria. The eruption is usually well developed. Suppurating glands and discharging ears are common in this type. Occasionally there may develop a retropharyngeal abscess.

Finally, we have the type where the infection, according to some authorities, occurs through the skin instead of the nasopharynx. These are the cases following burns, trauma, surgery and the puerperium.

In ruling out the other conditions we must take into consideration the prevalent disease at that period as well as the history of contagion. While many good men believe that seeing is the main criterion for diagnosing exanthemata, I think one may get a very good clue if one gets a reliable history of contact and incubation time to a definite known case of contagion. This certainly applies to scarlet fever.

German measles is often confusing. In Chicago every reported case of German measles is investigated by a representative of the Health Department in order to rule out the possibility of scarlet fever. The disease is milder in character. The enlarged cervical and post auricular glands, the discrete, pinkish macular eruption, which usually does not occupy the entire body at the same time but also occurs on the mucous membrane of the mouth, plus the absence of other scarlet fever symptoms should distinguish it from scarlet fever. The blanching test may be necessary to complete the diagnosis. Desquamation is unusual but when present is very fine, lasting 3 to 5 days.

In measles, the prodromal catarrhal symptoms, the Koplik spots, the blotchy character and irregular distribution of the rash as well as a definite history of exposure to measles should offer no difficulties as a rule.

Diphtheria should be remembered as a coexisting condition of scarlet fever.

Sensitiveness to certain foods may result in cutaneous disturbances. These are usually of an urticarial nature associated with nausea and vomiting and popularly known as stomach rash. Grandmother usually makes the diagnosis. With

the absence of other scarlet fever symptoms her diagnosis may be corroborated.

There are other conditions such as erythema scarlatiniforme, serum rashes, drug rashes as following the use of belladonna, quinine, potassium iodide, and antipyrin which with the exception of the cutaneous manifestations have little in common with scarlet fever, but must be ruled out by a good history and complete physical examination.

Finally I wish to mention roseola infantum, a clinical entity described in recent years. It is a mildly contagious disease. There is a pharyngitis and conjunctivitis. The temperature lasts for three to four days, then after it drops to normal the eruption appears as discrete macules which enlarge and coalesce in a few hours. The appearance of the rash with the fall of the temperature is characteristic of this disease.

CONCLUSIONS

1. The character of scarlet fever has changed in recent years and a mild atypical form is very prevalent.
2. Careful examination and prolonged observation is often necessary to diagnose these cases.
3. Early diagnosis and recognition of the mild atypical case is a great factor in preventing the spread of scarlet fever.

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ARTHRITIS: A SYSTEMIC DISEASE*

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In some victims of the arthritic syndrome pain, swelling or deformity limited to the joint areas provide a classical picture of arthritis. The generalized character of other diseases with localizing nomenclature had been recognized. Nephritis is now known as a generalized vascular disease. Many of us have come to look upon arthritis with its joint pain and its suffering as a disease limited to the affected joints. It has up to recently been regarded as an inflammation in the movable parts of the skeleton secondary to disease in a tonsil, tooth or other focus. The conception of all joint disease being due to pathology in tonsils or teeth was soon recognized as too narrow. Other structures, the gall bladder, the prostate and the colon were included as foci. Then it was discovered that the arthritic's whole body is more subject to infections, particularly streptococci, than the normal. Pemberton pointed to "foci" such as dead teeth, developing during the course of arthritis, the result of the arthritic process rather than its cause. Pelouze speaks of prostatitis developing as a result of the arthritic's generally lowered resistance. Both Pemberton and Pelouze emphasized the susceptibility of the tissues in general to the variable agents precipitating arthritis. They emphasize the importance of the soil rather than the seed (infection).

Arthritis is a disease involving all the tissues of the body but electing to usually show itself by disturbances in the joints. The more active the condition the more likely will persistent, skillful blood cultures disclose a bacteremia. The bacteria can lodge and grow in any favorable tissue. Physical examination shows the arthritic's body altered in structure or function in nearly all its tissues.

The skin is usually pale and sallow. There may be petechiae. The nails are dull and ridged by close set longitudinal lines.

The eyes may show a complicating iritis or choroiditis. Peripheral neuritis adds to the patient's disability. Neuritic pains, areas of a paresthesia or analgesia, even atrophy are now regarded for what they often are: variations in the arthritis picture.

The pulps of the teeth are especially susceptible to the arthritic agent. This has a practical bearing on the treatment. The status of the teeth must be occasionally reviewed in the patient once affected with any arthritic manifestations. Death of teeth during the disease may be the factor retarding the patient's recovery.

The arthritis patient tends to develop secondary anemia. This is proportional to the injury done to the erythropoietic centers by the causal agent of arthritis, probably a toxin of the invading streptococcus.

Bone is especially prone to change in arthritis. We may call it a bone disease as justly as joint disease. Bone is the most prominent constituent of the joint. It feels the effect of the disease early and shows it by overgrowth and atrophy. The deformity, the most striking and frightful feature of the disease, is largely contributed by bone.

*Paper read before the Arthritis Club of Chicago, Dec. 9, 1931.

The bony attachments, tendons, ligaments, joint capsule and cartilage are most intimately involved in the arthritic change. They swell or shrink, stretch or contract, adhere or separate to make the afflicted person more grotesque and immobile.

The voluntary muscles are involved early. Myositis in the form of lumbago may be the only manifestation of this protean ailment. They frequently atrophy or become fibrosed secondarily. One of the troublesome complications is the protuberant abdomen, largely a function of the weakened abdominal muscles. Goldthwaite and Osgood consider this postural deformity important in maintaining the arthritic condition. In this distended abdomen the colon balloons and the splanchnic vessels remain filled with blood. These workers have elaborated special exercises to correct these faults.

Heart muscle injury is not infrequent. The disease itself may run its course as myocarditis with joint complaints negligible or absent.

Swift has described a pneumonitis occurring in rheumatic fever. I am now studying such a condition in a patient with rapidly progressing atrophic arthritis with marked infectious features.

Pleuritis occurs occasionally during the course of arthritis. It is usually exudative. Some patients exhibit the findings of fibrinous pleurisy subsiding later or going on to the formation of fluid exudate.

The spleen becomes tumorous. This is easily recognized in the juvenile forms of arthritis. Later fibrosis and hardening replace tumefaction and softening.

The gastrointestinal tract is especially affected in arthritis. Fletcher has called attention to the almost pathognomonic behavior of the colon in chronic arthritis. It is distended, atonic. The haustrations are much reduced. A similar condition is seen in the gall bladder with its slow filling and emptying. The appendix retains the barium unusually long. Indeed the gall bladder and appendix have frequently been excised as foci, often with benefit. Infections of the crypts of Morgagni have come to attention as foci. They are remarkably common in arthritis. Herrold and I called attention to the large part played in arthritis by streptococci in the flora of the lower bowel, especially next the warm, moist wall of the colon.

Pemberton is responsible for the recognition in arthritis patients of an abnormally high blood sugar curve following the ingestion of carbohydrates. In an early work we showed that all chronic infections shared this metabolic phenomenon. The significance of this so-called lowered sugar tolerance is not yet clear. It may indicate dysfunction of the pancreatic islets or inability of the body cells to utilize glucose.

Patients with chronic arthritis often give low basal metabolic readings. Probably many of the body structures contribute to the maintenance of the metabolic rate. Because of the striking effects on the metabolic rate of thyroid dysfunctions low metabolic estimations have frequently been assumed to mean decreased activity of the thyroid gland. The predisposition of females to chronic joint disease still further involves the endocrine system in arthritis.

The importance of the gastro-intestional changes in arthritis is emphasized in therapy. An intimate connection between disorders of the colon and arthritis has long been recognized. Colonic massage and lavage help those patients showing a relation between disease processes in the bowels and disturbances in the joints. Physiological massage by exercises strengthening the diaphragm and external abdominal muscles, nonsurgical drainage of the gall bladder, attempts to change the bowel flora by diet or direct inoculation of acidophilus or Bulgaricus bacilli, catharsis as advocated in the older castor-oil treatment or Colonel Ridlon's senna tea, detoxification with ricinic acid, resection of the colon as inaugurated by Lane upon Metchnikoff's suggestion and recently revived by the Mayo clinic, all have and have had their advocates.

The involvement of the vasomotor apparatus has recently been recognized in arthritis. Cold extremities have always been complaints of joint sufferers. The feet and hands of these sufferers are frequently bluish white, cold and moist. The capillaries in the finger tips of the patient with chronic arthritis are dilated and tortuous. These patients have pallor and are especially susceptible to changes in temperature. Pemberton succeeded in producing spurs on the patella of a dog by ligating the vessels supplying this bone. Massage and heat exert favorable effects apparently through giving tone to the peripheral vessels thus stimulating the flow of blood. Recently

sympathetic ramisections have been done to increase the blood flow in the vessels of the limbs.

Positive blood cultures can be obtained in the majority of cases. Cecil was the last to emphasize this fact. We have been able to confirm his work by finding streptococci in the blood cultures of the majority of patients with atrophic arthritis. This renders understandable the generalized character of the changes in arthritis.

This comprehension of the many effects of this disease is necessary to a proper approach to its therapy. In the majority of instances no one "trick," be it vaccine, colonic lavage or removal of foci is likely to solve a problem having so many ramifications.

TULAREMIA IN CHICAGO: REPORT OF SIX SURGICAL CASES*

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AND

BENJAMIN SEID, M. D.

CHICAGO

Due to the high cost of beef, and the hard times of the past winter, rabbits have become a staple article of food for many members of our population, and infection resulting from the handling of wild rabbits brought to market has increased to a great extent.

In Dayton, Ohio, Simpson canvassed the market district, and found sixty-one cases of tularemia. Here in Chicago, up to 1929, but five cases were reported to the health department. In 1930 nine cases were reported, and in the first three months of 1931, 12 cases have already been reported. I am sure from my own investigations among butchers here that many cases of tularemia have occurred without a definite diagnosis as such having been made, either because the patients did not present themselves for treatment or because the disease was not recognized.

In my private work, and on my service at the Cook County Hospital, I have observed six cases of ulcero-glandular type of tularemia during the past winter. While this disease is present all the year round, we in Chicago may expect to see the disease only during the open hunting season for rabbits, which is during November, December, and January.

The initial lesion is usually a papule on the finger, at the site of a scratch or bruise which breaks down and ulcerates. A secondary lymphangitis supervenes, and in the course of the following several weeks the axillary or antecubital glands become involved. These enlarge and suppurate and require incision and drainage. There seems to be some difference of opinion with regard to this procedure, however, as three of my patients were advised not to have the glands incised. This has arisen from the fact that in some cases the glands were incised before suppuration was advanced far enough, and a sinus persisted until all of the gland had broken down. One of my cases applied hot fomentations until the abscess ruptured spontaneously. In two others, the abscesses were far advanced and had dissected out the axillary vessels and nerves, and had invaded the tissues under the pectoral muscles.

The initial lesion is a well defined ulcer with sharp edges, and a clean, reddened base which heals very slowly. It resembles the primary lesion of syphilis. Sometimes, as in one of our cases, many nodules in linear arrangement appear along the arm and simulate sporotrichosis. The prolonged febrile reaction with glandular involvement suggests tuberculosis. The more acute cases remind one of typhoid fever. The direct diagnosis is made by the blood agglutination test. The organism is difficult to cultivate from the purulent secretions.

Tularemia is a specific infectious disease due to bacterium tularense and is transmitted from rodents to man by the bite of an infected blood-sucking insect or by handling and dissection of infected rodents by market men or laboratory workers.

It was discovered in a general survey of diseased rodents in Tulare County, California, whence it derives its name. It was found originally by McCoy and Chapin in the Western states in 1911. McCoy published a description of the disease in ground squirrels in California in 1911, and showed the transmission to mice, rabbits, gophers, guinea pigs, and monkeys, but was unable to find any organisms in the lesions. In 1912 McCoy and Chapin isolated the germ and grew cultures of it on egg-yolk. During the experimentation with the new disease, Chapin himself became infected, as were also six workers in the Public Health service at Washington, D. C., and three workers in the Hygienic Lab-

*Read before the Chicago Surgical Society, April 3, 1931.

oratory at Washington during 1920 to 1927. Experiments were then discontinued.

The disease is initiated by the bite of an insect, probably the blood-sucking horsefly chrysops discalis which previously had bitten a rodent infected with bacterium tularense. Transmission to man occurs through the agency of the deer fly, woodtick, mouse louse, stable fly, squirrel flea, grouse, bed bugs, handling infected animals with open wounds on the hand, eating undercooked meat of infected animals, or by inhalation (as in laboratory workers). Transmission from man to man probably does not occur (although there is a case on record in which a mother became infected from dressing her child's wound through a scratch on her hand). Trained laboratory technicians working under extreme precaution became infected, and it is remarkable that not more handlers are infected.

Early experiments with the horsefly and rabbit showed positive transmission. The organisms were found to be present in the urine and in the nasal secretions. Transmission from rabbits to rabbits occurs by the louse Haemodipsus ventricosus. The virulence of infection is lessened by the length of time present in the rodent.

Laboratory tests. A specimen of sterile blood is obtained from the veins of the arm. Glycerine is added for preservative if specimen is to be sent a great distance. Agglutinins appear in the patient's blood from the 12th-14th day of the disease. The maximum titer appears by the 4th-5th week and lasts through life. The bacterium tularense is a small rod or round-shaped organism .3 to .7 u in length, .2 to .3 u in width, and is encapsulated. Stains fairly well with carbol-fuchsin, gentian violet, or Giemsa's stains; it shows up well when stained for a prolonged period.

The organism is found in the heart's blood, liver, spleen, and lymph glands. In stained preparations the organisms are found in the clear unstained areas. It is best cultured on serum glucose cystine hydrochloride agar and serum glucose cystine agar. Colonies appear in 24 hours. On other media it takes weeks to culture and the virulence is low. It is best to add rabbit's spleen to the media.

Guinea pig inoculation with pus taken from the lesion, is ground in mortar with saline, strained, and injected into the abdomen. The pig dies in two weeks and shows caseation of the inguinal glands and multiple foci of necrotic areas in the liver and spleen.

It is very difficult to culture the organism from human blood.

Pathology. The first autopsy in a case of tularemia was performed in 1924 by Sellinger, and showed nodules in the lungs, soft pulp in the spleen, with yellow-white nodules, necrosis and increased fibrous tissue. The suprarenals show yellow and gray translucent areas. The enlarged lymph nodes show many yellow foci with mononuclear cells and polymorph infiltration and necrotic areas. The endothelial cells of the blood vessels become infected and the bacterium tularense is found in all the vessels of the body. An obliterative endarteritis forms. The lesions resemble those of tuberculosis.

One attack renders an immunity that lasts for many years in man. Immunity is not so marked in animals. There is only one case recorded in which re-infection recurred.

From 1924 to 1928, 936 cases have been reported.

O'Hara's Disease in Japan and tularemia are identical.

Clinical Features. The disease begins with an incubation period of 2-5 days. The onset is sudden while the patient is working and usually commences with a headache, chills, body pains, vomiting, prostration, and fever. Where the infection starts from a bite, the patient complains of pain in the lymph glands draining the infected area. These glands become tender, swollen and inflamed, and then suppurate, requiring incision. The fever is septic in type and lasts from 3-6 weeks. Convalescence is slow. Over the initial lesion on the 3rd day a black, necrosed center forms and sloughs out, leaving a permanent scar.

Direct Diagnosis is made on—

1. A history of contact, a bite, or handling infected rodents, or occurrence in laboratory workers.

2. Guinea pig inoculation with the autopsy of guinea pig.

3. Agglutination of patient's serum, with bacterium tularense. The agglutination test alone is not definite because certain sera agglutinate both B. tularense and B. melitensis.

In a differential diagnosis one must consider typhoid fever, septic infection, glanders, anthrax, and sporotrichosis.

CASE REPORTS

TULAREMIA—SIX CASE REPORTS OF SIMPLE GLANDULAR TYPE

Case 1. H. K., male, butcher, aged 45 years, presented himself December 24, 1930, giving the following history: He had been dressing rabbits for the market for the past fifteen years. For the past three weeks he had pain in the left axilla. Four weeks previously he scratched his finger and a few days later noticed that it became sore and painful. He then developed a fever of 102.8° and lost appetite. He became constipated and languid, and could raise his left arm with difficulty. A swelling appeared in the left axillary region to which he applied hot dressings. The ulceration of the left index finger became larger, and was very tender and painful and exuded a slight amount of pus. He slept poorly and perspired freely at night.

Examination revealed a well developed male, somewhat pale and weak. There was a large fluctuating mass in the left axillary region. Over the middle phalanx of the left index finger there was an ulcer ½ inch in diameter, with raised, clean cut edges, and a reddened base. The blood examination showed a red count of 4,210,000; hemoglobin 70%, leucocytes 10,500; polymorphonuclears 75%; lymphocytes 23%. Agglutination was positive for B. Tularense, B. typhosus, negative for paratyphoid A and B and B. Militensis. The pus obtained from the axillary abscess showed no growth on ordinary media in 48 hours. The urine showed a trace of albumin.

The axillary abscess was incised and seven ounces of a thick yellow purulent material was evacuated. The abscess cavity had dissected under the pectoral muscles and upward toward the axilla. It was packed with iodoform gauze after being irrigated with Dakin's solution. The temperature gradually returned to normal in seven days and the cavity had completely healed in 14 days. The ulcer on the finger was gently curetted and swabbed with 4% tincture of iodin. It gradually healed in ten days, leaving a scar. The patient was discharged cured after two weeks.

Case 2. B. R., male, aged 45, butcher, Russian, early in December, 1930, while dressing wild rabbits for market, cut the left index finger on a nail. Two days later he developed temperature of 102° with chills. The finger became sore, and an ulcer developed at the site of injury. The axillary glands became swollen and painful. The fever continued for four days and patient lost appetite and eight pounds in weight during the succeeding six weeks. His physician advised hot dressings to the axilla. The ulcer on the finger healed slowly, but the swelling in the axilla became more marked. Softening of the glands with fluctuation appeared during the 7th week. There was a slight rise of temperature daily to 100°-101°. The patient became weaker and suffered from night sweats. I saw him during the seventh week of the disease when an examination revealed a large fluctuating abscess in the left axilla; movement of the left arm was painful. A healed scar was present on the index finger. Laboratory examination revealed a red blood count of 4,000,000, white blood count of 8,000; hemoglobin 70%; blood agglutination tests positive for B. tularense, but negative for B. paratyphoid A and B, typhoid, Militensis and abortis. The urine showed a trace of albumin.

Under ethylene anesthesia, the axillary abscess was opened January 27, 1931, by an incision running parallel to the outer edge of the pectoralis major muscle, and four ounces of a thick yellow pus evacuated. A culture of the pus on ordinary media was negative. Digital examination revealed a cavity four inches long and two inches deep extending up into the axilla and dissecting out the axillary vessels. An iodoform drain was inserted and the cavity gradually healed in from below during the succeeding two weeks. The temperature returned to normal in four days, and the patient rapidly gained in health and was discharged cured on February 10.

Case 3. C. J., negro male, aged 17 years, entered the hospital Jan. 12, 1931. His occupation was that of butcher's assistant, dressing chickens and rabbits. He complained of swellings on the extensor surface of the right elbow which had been present for one week. Had had fever for two or three weeks. He had been dressing rabbits for the past three months, and first noticed a small nodule on the index finger of the right hand one week after starting work. This remained for one month. Eleven weeks later he noticed the swelling at the elbow. He now has temperature of 102.8, pulse 92, respiration 22. There was a glandular swelling at the elbow. He now had temperature of 102.8 temperature varied from 101° to 104°. The lesion on the finger was ulcerated and after four days of hot dressings the gland at the elbow began to undergo softening. The blood showed a positive agglutination for B. Tularensis in dilution of 1-180.

In two weeks the anticubital gland was incised and drained. The temperature now became normal. A large gland now appeared in the axilla and another on the flexor surface of the right arm over the biceps muscle. Both fluctuated and were incised and a moderate amount of yellow pus obtained. This case resembled sporotrichosis in that a number of nodules appeared in a line along the arm. Healing of all lesions occurred in the following two weeks.

Case 4. J. S., female, 43 years of age, colored, entered the hospital January 6, 1931, with an ulcer, involving the left forefinger, which had been present for five weeks. Pain and swelling of the left axilla had been present for four weeks and nodules along the arm for three weeks. While washing dishes five weeks before entrance, the patient injured the forefinger of the left hand, and a blister appeared at this site. She opened this with a needle and during the following three to four days developed chills and fever. About the same time the patient handled same rabbit skins. Following this the axilla began to swell and became painful. During the following week several nodules appeared on the forearm and arm. Constipation was present and vomiting occurred.

The blood gave a positive agglutination test for Tularemia in dilution of 1-640. The red blood count was 4,900,000. White blood count 5,350; polymorpho-

nuclears 62%; lymphocytes 38%. Urine analysis was negative; Wassermann negative. The ulcer on the finger was clean cut and tender and gradually healed. The mass in the axilla attained the size of a small orange and rutured spontaneously, draining a moderate amount. The patient left the hospital with some enlargement of axillary glands in stage of healing.

Case 5. S. S., white male, aged 23 years, entered the hospital January 2, 1931, complaining of swelling of the left arm above the elbow. The patient is a butcher who struck his hand two months prior to entrance on an icebox. He was dressing rabbits at the time, and noticed some swelling of his finger during the following three weeks. After this time he developed chills, fever of 102°, and vomiting, and the arm became swollen near the elbow. He was compelled to stop work on account of the severity of his symptoms. His doctor advised hot dressings to his arm and hand. He showed, on entrance, a temperature of 100.2°, pulse 100, respiration 20. There was a swelling just above the elbow on the medial surface, which was soft and tender. The axillary glands on this side were enlarged and tender. He complained also of headache and malaise, and suffered with night sweats. There was a loss of 10 pounds in weight. A blood agglutination test for Tularemia was positive in 1-1280 dilution. He was allowed to go home for further treatment.

Case 6. Colored, adult, male, assistant to butcher in dressing rabbits, developed chills and fever and swelling of axillary glands. He applied hot dressings to his axilla until the abscess ruptured and drained freely. He made a gradual recovery. This case was in the butcher shop of Case No. 1, and did not consult a doctor. The diagnosis is not confirmed by agglutination test, but is made by the butcher and patient himself because of the similarity of their symptoms.

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EDEMA OF THE LARYNX: ITS ETIOLOGY AND TREATMENT*

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Edema of the larynx is the most frequent cause of acute laryngeal obstruction. It necessitates immediate and skillful management. Although such edema frequently appears to be a definite clinical entity, it is usually an objective symptom or complication of a more extensive disease. It may arise because of a non-inflammatory or inflammatory condition, occurring within the larynx itself. It may be secondary to inflammation or disease of structures adjacent to the larynx, or it may be associated with certain general or systemic diseases.

Diagnosis. To establish an exact diagnosis of the laryngeal obstruction, is of utmost importance for determining its etiology and, therefore, its proper and efficient treatment.

A *history* of the mode and rapidity of onset of acute laryngeal obstruction, the sequence of events leading up to the onset, the absence or frequency of recurrences, and presence of diseases or conditions which might be related to such a crisis, are of considerable importance.

Indirect examination by use of the laryngeal mirror, if at all possible, will frequently give information of location of the edema or obstruction—epiglottic, supraglottic, glottic or subglottic, the presencee or absence of membrane, and the presence or absence of an unsuspected foreign body. At least some information may be obtained in either the home or the hospitalized case if this method can be used.

Direct examination by use of the laryngoscope is practically possible only in hospitalized cases. More information becomes available than the indirect mirror would give. An impacted foreign body could be quickly diagnosed and easily removed, membrane or tenaceous secretion aspirated, and, if advisable, direct intubation performed.

Roentgenologic examination, particularly in suspected foreign body case or in retropharyngeal abscess, is of considerable value. It may also give evidence of an early lung involvement.

A culture of larynx, preferably by direct contact with laryngeal tissues, is of utmost importance in all inflammatory conditions involving the larynx.

General examination, particularly of the chest and heart, either before or after emergency treatment, may reveal a pneumonia or a cardiac disease as a cause of the acute dyspnea.

Certain particular symptoms are of importance in determining the condition of patient.

1. *Inspiratory stridor* may be mild or intense, with little or much indrawing of suprasternal, epigastric and intercostal spaces.

2. *Ashy gray (or pale) cyanosis,* so frequent

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in acute laryngotracheitis or laryngotracheobronchitis, is observed much earlier than the typical blue cyanosis. Its gradual development over a period of hours or days is of grave significance. It indicates that the patient is being slowly and surely exhausted by the prolonged struggle with the obstructed airway, added to the increasing general toxemia. Such an ashy pallor is of greater significance for intervention than the blue cyanosis which frequently occurs too late to save the case.

It has often been pointed out that the degree of respiratory embarrassment is not always indicated by the patient's color. The color of the lips may be pink with extreme laryngeal obstruction.

3. *Restlessness,* even though present in mild degrees of obstruction, is significant. Increasing restlessness is a danger signal.

4. *Temperature,* if absent, would suggest either a very localized inflammation without systemic absorption or the presence of a foreign body. Temperatures of 102 to 103 degrees indicate a less localized inflammation, and if rising higher, indicate an increasing general toxemia.

5. *Pulse,* rate and quality, signify much in the progress of the disease and for the mode of its treatment. A gradual and steady increase in the rate and a weakening in quality, indicate an unfavorable course. It is then a very significant danger sign.

6. *Respiratory rate,* if increasing, and becoming shallower, indicates that the respiratory system is not able to supply sufficient oxygen to keep the circulatory system functioning efficiently. It is, therefore, the inadequate oxygenation plus the laryngeal obstruction, plus the general toxemia which throws such a terrific burden upon the heart. It is not the asphyxiation, but rather the severe exhaustion and cardiac strain which are so serious.

ANATOMY OF LARYNX AND ADJACENT REGIONS

A consideration of the anatomical structure of the larynx and adjacent regions, particularly of the submucous and underlying tissues and the intermuscular fascial planes, will demonstrate a considerable difference between the very young child and the adult. It is well known that, in the young child, the lymphatics are richer and the mucous membrane more loosely attached to the underlying tissues in the arytenoid regions, the aryepiglottic folds, ventricular bands and the subglottic region, than in the adult. Therefore, little injuries, manipulations or inflammations in the very young child's larynx, will cause edema more quickly and more profusely than in the adult.

EDEMA CAUSED BY CONDITIONS WITHIN THE LARYNX

Non-inflammatory.

1. Inhalation of steam, irritating gases, smoke and vapors. More frequent during war and in industry, and therefore, occurs in adults. Occasionally hospitalization is necessary. If the edema is severe it frequently involves more than the larynx and descends to the trachea and smaller bronchi.

2. Swallowing scalding and corrosive fluids. The problem concerned involves the esophagus more than the laryngeal tissues.

3. The injudicious application of caustics to the larynx. The use of strong solutions of silver nitrate in the larynx already highly sensitive, should be condemned.

4. Foreign body impacted in larynx. It is well known that the larynx may tolerate an overlooked foreign body. When such a body is of sufficient size and so situated as to cause an increasing edema with consequent obstruction, blind methods, such as indirect intubation for relief of the dyspnea, may result in the aspiration of the foreign body. The simple problem then becomes one of greater consequences. Therefore, if possible, a preliminary indirect mirror or direct laryngoscopic examination should greatly simplify the case.

5. Malignancy of larynx.

EDEMA CAUSED BY CONDITIONS WITHIN THE LARYNX

Inflammatory.

1. *Acute Laryngitis.* Edema is rare in simple cases. Acute laryngitis in which edema occurs, may be divided into three groups: (a) Edematous, in which a serious infiltration occurs in the underlying tissues; (b) Phlegmonous, in which the infiltration is purulent, and (c) Membranous, in which a rather definite membrane is attached to part or all of the larynx.

a. *Edematous.* This type is usually associated with a descending so-called streptococcus

sore throat. In swelling of the aryepiglottic folds, they may be almost in contact in the midline, and the epiglottis so edematous as to hide most of the edematous aryepiglottic folds. The mucus may be thick, tenaceous, and at times abundant. Various degrees of edema occur. The same picture is seen in edema of the larynx associated with inflammations of adjacent structures.

b. *Phlegmonous.* Edema may quickly produce asphyxia. Tracheotomy, followed by incision of areas containing pus, should be performed early before great destruction of the underlying cartilaginous structure occurs.

c. *Membranous,* Diphtheritic and non-diphtheritic. The differential diagnosis between diphtheritic and non-diphtheritic laryngitis, is frequently difficult because of their clinical similarity. Cultures from throat and larynx and direct laryngoscopic examination are frequently necessary. Membrane usually appears in diphtheritic laryngitis while in non-diphtheritic, the accumulating thick secretion may be mistaken for membrane. Edema is uncommon in diphtheritic and usual in non-diphtheritic, especially in the subglottic region. The membrane in diphtheria usually extends downward over subglottic tissues, prevents phonation, and if in sufficient amount, produces great laryngeal obstruction. In the non-diphtheritic type, the subglottic, and to a less extent the supraglottic tissues, are edematous. This rarely prevents phonation. The cultures in non-diphtheritic cases are negative for bacillus diphtheriae, but are positive for one or more of various types of organisms, such as staphylococcus, aureus and albus, streptococcus hemolyticus, pneumococcus and others.

2. *Acute Laryngotracheobronchitis.* A descending nasopharyngeal infection of a severer type than causes involvement of the larynx only, descends to the trachea and bronchi and may at times reach the smaller bronchi, ending in a fatal bronchopneumonia. Hemolytic and non-hemolytic streptococci, pneumococci, influenzal bacilli or mixed infections, are the organisms found in culture from various types of cases of laryngotracheobronchitis.

This disease, usually occurring in children, develops in the course of an acute respiratory infection, occasionally in isolated cases, but usually in epidemics, as a complication in measles or in the presence of vegetal foreign bodies in the bronchi. The hyperemia is general and involves both the mucosa and submocosa, particularly the loose subglottic tissues. It is the obstruction in this subglottic area which demands early relief by intubation or by tracheotomy. Early, in the non-exudative stage, the secretion is scant, the cough dry, and the temperature low. As the exudate increases in amount, it becomes thicker and more glue-like in consistency—more mucin, desquemated epithelial, lymph and pus cells.

It has been observed that the prognosis in these cases depends much upon the duration of this dry, non-exudative stage. The slimy, sticky secretion interferes so much with ciliary action that accumulation and plug formation occurs. Here the respiratory efforts are not sufficient to relieve the obstruction and asphyxia may occur early if not mechanically relieved.

After continuous effort by the child, over a period of hours or days, in attempting to get sufficient oxygen to the lungs through the obstructed airway and to expel the accumulating secretion and plugs, exhaustion becomes profound. The continuous effort, the restlessness and sleeplessness, and the insufficient oxygenation in addition to the general toxemia, lead to early cardiac exhaustion and failure unless timely relieved. Even then the mortality of these cases is about forty per cent.

During 1930 a limited epidemic of such cases occurred in and about Peoria. The less severe cases, numbering perhaps thirty or thirty-five, with little laryngeal edema, which could be treated expectantly, were usually diagnosed as a croup or flu. In my own practice, I saw seven severe cases, all hospitalized. The mortality was forty-four per cent. This does not include vegetal foreign body cases.

Vegetal laryngotracheobronchitis closely resembles the acute infective type of laryngotracheobronchitis. It is a serious type of septic bronchitis, due to aspiration of vegetal foreign bodies. It occurs in children and its etiology is easily overlooked.

TREATMENT

The treatment of acute laryngeal obstruction due to edema, varies according to the type of case. It necessitates a careful preliminary examination and determination of its cause. With-

out this, treatment may at times defeat one's most brilliant attempts.

If the degree of obstruction is relatively mild, expectant treatment may be sufficient. Such a course is safe only when the case is hospitalized, when special nurses are on duty who are experienced in laryngoscopic and bronchoscopic nursing, and when a physician is close at hand who can perform an immediate intubation or tracheotomy when most needed.

Proper room temperature, about 75 degrees F., proper humidity, a high intake of fluids preferably by mouth, removal of all sources of irritation and annoyance and absolute rest in bed, are essential. No narcotics should be used, particularly because of the tendency to inhibit the defensive cardiac and respiratory activity.

As soon as it is deemed advisable to interfere —when the restlessness, the pulse and respiratory rate increase, indrawing of the supra and infrasternal and the intercostal spaces increase, and the patient is in marked distress, do not let the patient's best chance slip away. An intubation or tracheotomy should be done without hesitation when once decided upon. It is far better judgment to do this early than too late, and thereby have the patient lose his only good chance for recovery.

Particularly, in acute *laryngotracheitis* or *laryngotracheobronchitis,* the strictest attention to every detail is of utmost importance. At best these cases prove most difficult to handle and the mortality is high.

I consider my most useful and trustworthy armamentorium in the order of their value, first, and of greatest importance, the eight or twelve hour special nurse who is prepared for nursing laryngoscopic or bronchoscopic cases; second, the old faithful bedside suction apparatus, for use any moment of the day or night, and third, the oxygen tank or tent. No critically ill patient of this type, can be treated properly outside of a hospital.

Those physicians who have struggled through long nights with these little tracheotomized patients, who beg for relief from this ever-forming thick and mucoid section, which accumulates in the larger bronchi and trachea, will appreciate the invaluable services of specially trained nurses. They are the ones who can quickly detect any change in the course of the case, and, because of their better knowledge than the average nurse, can save the surgeon much valuable sleep and unnecessary worry.

We use the suction apparatus as frequently as the secretion appears to be accumulating in the trachea, at the carina or about the tube. In the more severe cases, it is used as frequently as every five to fifteen minutes. The soft rubber catheter can be introduced quickly even to the carina with very little trouble. I have had new nurses on a few of my cases who were so pleased because they did not have to use the suction for the previous two to four hours that they permitted accumulation of plugs of secretion which nearly filled the lower end of the trachea. Two of the cases required an emergency bronchoscopy to remove these plugs. Therefore, I prefer the nurse to keep the airway, the plumbing, open by more frequent aspiration.

Position is important. We use a special type of rack, resembling a backrest, so the patient's head is low and the body slanting about a thirty degree angle. This angle can be varied easily.

Oxygen, I believe, is in certain cases, of much benefit. It is used through a cone or a tent, for five or ten minutes, at frequent intervals or continuously, as required. Since the air breathed by the patient, who is still restless and needs sleep, is nearly pure oxygen, it can readily be seen that less effort is required by the cardio-respiratory system to function. It also appears that inhalation of oxygen or oxygen and carbon dioxide, has a favorable action on the viscid, glue-like bronchial secretions. It seems to increase cilary activity and helps to make the secretions a little more liquid.

From the very beginning, fluid intake should be kept at a high level. Our best remedy for fighting the terrific toxemia, is fluids by mouth, if possible, by rectum (not so useful a route in some cases), by hyperdermoclysis or intravenously. Glucose has been our most suitable fluid.

Transfusion may help. Foreign protein has apparently been of some value in some physicians' hands. The antistreptococcus serum, the mixed respiratory vaccine (6 to 8 minims every 6 to 8 hours) and milk, have been used with varying success. I believe it should be used more frequently and early.

The use of digalen, starting as soon as the case was seen, has apparently been of some value.

In the earlier stages when the secretion has such a great tendency to dry, and the cough is agonizing, the internal administration of sodium bicarbonate, 45 grains every three hours, as suggested by Chevalier Jackson, is worthy of more attention.

The controversy, intubation versus-tracheotomy, need not to be touched upon here. Let it suffice to say that any other method than tracheotomy (except bronchoscopy when necessary) for removal of these continually forming mucoid, glue-like secretions, is not worthy of consideration.

Case 1. Boy aged 3½ years, referred by Dr. Maurer, exposed three days before admission, by kissing an aunt who had a "streptococcus sore throat." Eighteen hours before admission, patient complained of sore throat and severe earache. Five hours after this, breathing became harsh and some dyspnea developed. This condition rapidly became worse and physician transferred patient to hospital.

On admission, patient showed a marked ashy, gray pallor, as if in shock. Respirations were stertorous, indrawing of supra and infrasternal spaces increased rapidly, temperature little over 101 degrees, pulse feeble and rapid, and respirations shallow and rapid. Laryngeal examination showed marked congestion and edema of all structures, particularly subglottic tissues. Lungs were clear. Tracheotomy was thought preferable to intubation.

Six hours later, patient began vomiting. Temperature 102.6, pulse 130, respiration 28. Lungs still clear. In spite of continuous inhalation of oxygen, ashy, gray pallor not changed much.

Twenty-four hours after admission, 42 hours after onset, patient began having convulsions. Temperature 102, pulse 148, respiration 36. Three hours later, lungs began filling somewhat. Temperature 102.2, pulse 180. Patient passed out 1½ hours later, 48 hours after onset of symptoms, with pink lips and conjunctiva. (Streptococcus laryngotracheobronchitis with laryngeal edema.)

Case 2. Boy, 5 years of age, referred by Dr. Jenkins, went to bed the night before, feeling fine. Awoke 1 A. M. from sound sleep, having great difficulty in breathing. As the day wore on this became worse. Submaxillary and anterior cervical lymph glands had swollen to size of small hen's eggs, but gradually diminished during the day. At 3 P. M. breathing became markedly more difficult.

Examination on admission 5 P. M., 16 hours after apparent onset, patient had terrific difficulty in both expiration and inspiration, and made a noise like a frog croaking. He was able to talk rather clearly. Lips and conjunctiva were ashy pale. Examination of larynx showed marked edema of aryepiglottic folds and subglottic tissues. There was not much indrawing of supra and infrasternal spaces.

Oxygen tent, ice collar, digalen, fluids were begun. Next day, lips and conjunctiva were still pale, pulse was rapid and temperature 102.

A pediatrician, Dr. Sibilsky, was called in consultation. He set about forcing fluids by all methods and gave supportive treatment. The patient improved for the next 4 days, but died on the fifth day with cardiac exhaustion. Culture, streptococcus type. (Acute streptococcus laryngotracheobronchitis with laryngeal edema.)

Case 3. Boy 2½ years of age, referred by Dr. Maurer, gave a history of dyspnea, with attacks of cyanosis during a period of 5 days before admission. Mother thought child had aspirated some food before onset. However, patient had had a little head cold before this.

Upon admission, patient was extremely dyspneic, and nails and lips were cyanotic. Chest showed dullness, diminished breath sounds and loss of tactile fremitus over lower left lobe and loud rales were heard over entire chest.

Laryngeal examination showed considerable edema of arytenoids and aryepiglottic folds and some subglottic edema. Because of the history suggesting foreign body, a bronchoscopy was done. The tracheal wall was lined with a thick-tenaceous mucoid secretion, which diminished as the carina was approached, but was continued into the left main bronchus. The lower lobe bronchus was filled with cloudy fluid and some material which appeared caseous or necrotic. This material was aspirated. Right main bronchus was normal.

A tracheotomy was done an hour later. With oxygen, frequent aspiration through tracheotomy tube, fluids, etc., patient began improving. The next day, about 24 hours after admission, and six days after onset of symptoms, patient became rapidly worse. Chest showed few rales and no secretion could be aspirated, but patient became more cyanotic and died. (Acute laryngeotracheobronchitis, with edema of larynx probably of vegetal foreign body origin.)

Case 4. Baby 21 months old, referred by Drs. John Vonachen and Sibilsky. "Cold" 2½ days before admission. About midnight, 30 hours before admission, patient began having difficulty in breathing. This gradually increased and patient became very irritable and restless. Examination by the pediatricians, revealed asthmatoid wheezing throughout chest. X-ray showed no abnormal markings, no obstructive atelectasis or emphysema in lungs.

Patient was hospitalized and under oxygen tent for 36 hours. Temperature 102-103, rectal. Patient became cyanotic at times. Crys indicated increasing subglottic edema. Cough practically non-productive as is usual in these small patients. Breathing became gradually more difficult and periods of cyanosis more frequent. Indrawing of supra and infrasternal areas more marked. Tracheotomy done about 2 hours after my first visit. Much purulent tenaceous, slightly pinkish secretion, was

aspirated from trachea and larger bronchi, through No. 7 French catheter through No. 1 tracheotomy tube.

For the next two days, the patient was little interested in his surroundings. Nurses aspirated frequently day and night. On the 4th day, patient was in good condition, little suction was required and he bgan noticing his surroundings. Tube removed 3½ weeks after insertion. Discharged recovered 4 weeks after onset.

Comment. Space will not permit further description of cases. Altogether, including those of vegetal origin, I have observed 14 cases of this type during the past two years. The longest drawn out case required the closest care for 4½ months, during which time 4 life-saving bronchoscopies were done, and three special nurses had to take time out for recuperation. The patient recovered in perfect health. The shortest case took four days. The mortality in the non-vegetal cases was 42% and in those of vegetal origin, zero.

Cases of laryngeal diphtheria are described elsewhere.

EDEMA FROM REGIONS ADJACENT TO LARYNX

1. *Inflammatory.*

"Acute Septic Sore Throat" as a term in the literature, includes many conditions. For our purposes we shall review the more important of these throat diseases.

Peritonsillar abscess (Quinsy) may be divided clinically into three types. The *first type,* occurring above the middle of the tonsil and external to it, produces little edema and infiltration of the pharyngeal wall and little or no edema of the aryepiglottic fold on the involved side. The *second type,* below the middle and infiltrating the posterior pillar, burrows downward producing more extensive edema and infiltration of the pharyngeal wall and the aryepiglottic fold. The laryngeal edema may be so intense as to completely obstruct the glottis. The *third type,* external to the tonsil and pointing anteriorly, also produces much edema and infiltration of the pharyngeal wall and aryepiglottic fold on the involved side.

The treatment is incision of the abscess as early as pus is thought to be present. If incised too early, there is much danger of infecting new areas and producing an extensive cellulitis in the neck. Incision may be necessary externally. Ice collar or ice bag may be applied to the neck and chips of ice given by mouth. Tracheotomy is rarely necessary.

Retropharyngeal abscess, an abscess located between the posterior pharyngeal wall and the vertebral column, forms usually rather high in the postpharyngeal tissue in the child and rather low in the adult. Because the pressure is forward from above, the epiglottis is pushed downward and thereby tends to obstruct the larynx by pressure rather than by edema.

In the adult, *abscess in the pyriform fossa* or para-esophageal region produces edema and infiltration of the adjacent hypopharyngeal tissue and the esophagus, and also of the arytenoids, aryepiglottic folds and the epiglottis.

Case. A male, farmer, age 44, referred by Dr. Egan, who treated him for influenza three weeks before, began having difficulty in swallowing, with some pain about 52 hours before admission. About 20 hours before admission, patient became unable to swallow anything, even fluids. Breathing became more difficult and patient found it was necessary to push head and chin markedly forward to get air to lungs.

Upon admission, loud and rough expiratory wheezing, somewhat ashy color of mucosa, temperature 103 degrees, pulse 112, respiration 30, W. B. C. 25,600, smear and culture of throat, streptococcus and diplococcus, negative to vincents and Klebs-Loeffler. Patient was in great distress, anxious, extremely restless and gasping for air.

Examination revealed a moderate anterior and posterior cervical adenitis and no swelling in tonsillar region, tongue or pharynx. There was extreme tenderness to right and posteriorly to larynx. With laryngeal mirror a large bluish mass, more on the left than on the right, filled nearly two-thirds of the region above the larynx. On the right starting about at the upper level of the larynx, the pharyngeal mucosa was very dark, markedly injected and pressed against the edematous aryepiglottic fold on that side. At operation, the esophagoscope was passed downward with much difficulty to the site of the upper border of the cricopharyngeous muscle. The mass, which at this point pushed the larynx to the opposite side, was incised. About 45 cc of pus poured out of the incision and passed down the esophagus. Then the edematous left arytenoid was incised. There appeared to be a small amount of pus deep in this mass.

Immediately after the operation, the patient felt great relief. Ice chips by mouth, ice collar, etc. Next day breathing was easier, the edema much reduced and patient could swallow water.

In relation to the above case, indiscriminate stabbing of edematous masses in the larynx may not only open up new avenues for infection, but

severe fatal hemorrhage has been reported in the literature.

Ludwig's Angina. The laryngeal edema is frequently intense in both the erysipelatous and abscess types. The epiglottis, arytenoids and aryepiglottic folds may, in the acute stage, become so intensely edematous as to cause asphyxia very quickly and without warning.

Case. Male, about 30 years of age, obese, referred by Dr. Harold Vonachen for difficulty in breathing. About 24 hours before examination, patient had had all teeth extracted under general anesthesia. About 18 hours after extraction, patient began having difficulty in swallowing and breathing. Respirations rapidly became labored.

Examination revealed marked induration of neck, submental submaxillary to angles of jaw, and in floor of mouth. Mirror examination revealed such extreme edema of epiglottis and arytenoids that no visible space appeared left for breathing. Patient was extremely dyspneic and cyanotic at times. Chips of ice in mouth, ice packs to neck, oxygen for five minutes at a time to relieve temporarily the frantic attempts at respiration, and adrenal in spray gave considerable relief within the next 12 hours. A tracheotomy tube was at hand for emergency, and specially trained nurses were in charge. Patient became delirious about one week later, but at the end of two weeks was discharged, recovered.

Intubation would have been useless in such a case. There was not space in the glottis for one. The tube would have caused trauma and this would have to be reckoned with later. Even though a tracheotomy might tend to spread the infection downward in the erysipelatous type, it would seem highly preferable where abscess formation will occur.

Inflammation at the base of the tongue produces edema of the epiglottis, but easily extends backward and may so severely involve the laryngeal tissues as to require tracheotomy.

2. *Malignancy and inflammations of the upper end of the esophagus* cause a variable degree of edema of the aryepiglottic folds and the arytenoids, particularly in the late stages of disease.

3. *Operations on structures adjacent to the larynx* such as the submaxillary gland and the thyroid gland. I have in mind a case of submaxillary stone in a fleshy patient, who began having some difficulty in breathing before reaching his room. A half hour later, the nurse left the room about five minutes. When she returned the patient had stopped breathing. The glottis was completely obstructed by the edematous aryepiglottic folds.

4. *Passive congestion* due to compression of the tributaries of the vena cava in cases of enlarged heart, enlarged peribronchial glands, mediastinal growths, acute lymphatic leukemia, Hodgkin's disease and goiter, produce dyspnea and edema of the larynx. Usually the edema occurs very late and may be terminal.

Case. Man, aged 35, diagnosis acute lymphatic leukemia, W. B. C. 54,000, small lymphocytes 84%, developed edema of the larynx about 36 hours before death.

5. *Pulmonary tuberculosis.* It is well known that laryngeal involvement is the most serious complication of pulmonary tuberculosis and that it occurs in 15 to 20% of all pulmonary tuberculosis. Laryngeal edema is most frequent in the interarytenoid and arytenoid tissues. Marked edema is of most serious import.

LARYNGEAL EDEMA ASSOCIATED WITH GENERAL DISEASES

A consideration of the factors concerned in the production of general and local edema, is out of the scope of this paper. However, a study of the following named factors in its production is of considerable interest: 1. reversal of the albumin—globulin ratio, 2. blood chlorides, 3. blood cholesterols, 4. specific exogenous and enogenous toxic agents and 5. passive congestion.

For lack of space it is advisable to merely enumerate the more important general diseases in which edema of the larynx may be associated. The factors involved are frequently different than in the types described above. The treatment of the edema will vary with the type of case and the etiology.

1. Contagious diseases in which a rather simple and uncomplicated edema may occur.
2. Angioneurotic edema.
3. Allergic.
4. Myxedema.
5. General cardio-vascular group.
6. Bright's disease in particular.
7. Diabetes.
8. Lues.
9. Overdoses of potassium iodide in susceptible patients. The edema will quickly subside

after the drug is discontinued and 1 to 2000 adrenalin administered.

SUMMARY

1. Laryngeal edema, producing acute laryngeal obstruction, is caused by or associated with a great variety of conditions and diseases.

2. It is the most frequent cause of acute laryngeal obstruction.

3. An early diagnosis of the cause is essential for the most efficient treatment of the laryngeal obstruction.

4. The degree of acute laryngeal obstruction has no direct relation to the seriousness of the condition or disease.

5. Tracheotomy is preferable, particularly in acute laryngotracheobronchitis, when secretions become tenaceous and abundant. Intubation may be preferable if edema is not great, if duration of intubation is short, and if tracheobronchial secretions are not tenaceous and abundant.

6. The prognosis is more dependent upon the general toxemia than upon the laryngeal obstruction itself, providing this is relieved fairly early,

319 Jefferson Bldg.

DISCUSSION

Dr. William A. McNichols, Dixon, Illinois: The immediate appeal of this paper by Doctor Sneller is personal to each member of the medical profession. Edema of the larynx is a condition which any of us may meet at any moment. If not recognized, edema of the larynx is fatal; only prompt and proper treatment may avert this fatal termination.

An unique feature of edema of the larynx is that despite its comparative rarity it is produced by such an amazing variety of conditions. This chart compiled by two Brooklyn Pediatrians in the February, 1931, issue of the *Archives of Pediatrics* is particularly simple and illuminating:

1. Inflammatory.
   - (a) Exposure to colds.
   - (b) Following grippe.
   - (c) Retropharyngeal abscess.
   - (d) Erysipelas of the larynx.
2. Systemic diseases.
   - (a) Renal.
   - (b) Circulatory.
   - (c) Exanthmata.
   - (d) Syphilis, cancer, tuberculosis.
3. Neurotic edema.
   - (a) Angioneurotic edema.
4. Traumatic.
   - (a) Foreign body.
   - (b) Inhalation of fumes.
   - (c) Acid poisoning.
5. Drugs.
   - (a) Potassi iodidum.
6. Pressure from without.
   - (a) Enlarged thyroid.
   - (b) Enlarged glands.

The greater number of my cases has been from foreign bodies. These, with an early tracheotomy were 100% successful. I have not found it necessary to do a tracheotomy on any case of Ludwig's angina. An external mid-line incision through the mylohyoid muscle was sufficient. This has also been true of the cases of retropharyngeal abscess, that is, simple drainage has relieved the dysnea. I have encountered only three cases that should be classified as laryngeal tracheobronchitis.

In these cases an emergency tracheotomy was done immediately upon my arrival, but all three died at intervals varying from a few minutes to a few hours. In a few cases of glandular swelling a tracheotomy was done with satisfactory recovery.

Restlessness is one symptom that cannot be overemphasized. Any individual suspected of obstructive laryngeal edema should not be given a sedative. An individual with air hunger is restless as he depends in part on his voluntary muscles to draw in enough air to keep him alive. When he falls asleep he loses control of these muscles and he awakes with a start of impending death.

I quite agree with Doctor Sneller in regard to treatment. Sprays may be of some value and other drugs in isolated cases may be thought to be of some aid. A case with true edema of the larynx either needs an early tracheotomy or removal of the causes of the edema.

Dr. C. D. Sneller (closing): As to treatment, particularly in the acute laryngotracheobronchitis cases with laryngeal edema, in which a tracheotomy has been performed, there should be nurses on the case who are trained in laryngeal and bronchoscopic cases. The suction apparatus for aspiration of thick, tenaceous secretion by way of the tracheotomy tube, the use of oxygen by funnel or oxygen tent, forcing fluids and other methods which fall under medical treatment, are all extremely essential in the successful treatment. In spite of such treatment the mortality is still about 40%.

THE ETIOLOGIC RELATIONSHIP OF CERTAIN GRAIN FUNGI TO ACRODYNIA, THROMBO-ANGIITIS OBLITERANS AND RELATED CONDITIONS*

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All of the cereal crops are subject to diseases classed under the general group, Ustilaginaceae (smut). The outstanding characteristic of all the grain smuts is that they nearly always destroy the head or grain of the wheat, rye, barley, corn or oats affected. There are more than 300 species of these grain parasites recognized of which 205 are found in the United States. It is estimated by F. L. Stevens and J. G. Hall[1] that 100,000,000 bushels of grain are affected annually by the development of smut on corn, wheat, oats, rye and barley.

The common corn smut (Ustilago Zea-Mays) develops on any part of the corn plant, but is usually more conspicuous on the ears and tassels. It has been reported that a certain type of poisoning occurred in cattle fed on corn badly contaminated with another smut parasite, Fusarium monoliforme, and that the disease resembled ergotism. (Koehler and Holbert[2]). Horses, cattle and hogs became thin, some of the hair dropped off, and finally the hoofs sloughed off. Cattle fed on corn rotted by diplodia infection developed paralysis.

Corn, which is the major farm crop in Illinois, holds the first rank in the number of diseases which attack it. Some corn diseases are very conspicuous as, for example, the various rots and smuts. There is a considerable number of other equally important diseases that weaken the plant but cause no conspicuous external symptoms.

Ergot, Claviceps purpurea, is a better known grain parasite. It occurs commonly on rye (Secale) and many other species of grass such as wheat grass, wild ryes, Kentucky blue-grass, Canada blue-grass, red-top, timothy and rye-grass. Occasionally it is injurious to wheat. The mycelium of the ergot fungus attacks the ovary of the plant while it is in bloom. The fungus invades and consumes the ovary and replaces it with the ergot which consists of a dense mass of fungoid, interwoven mycelium, a sclerotium. Cattle fed ergot-ized grain or grass become emaciated and rough-haired. There is a disturbance in the circulation through the extremities, and gangrene and sloughing of parts of the tail, ears or hoofs may occur. Abortion may also follow.

As is well known man is also poisoned by partaking of food (usually bread and other cereal foods) contaminated with ergot. French physicians have devoted particular attention to this condition. (Hirsch[3]). Thus under the title "mal des pieds et des mains", or erytheme epidemique" or "acrodynie" French physicians described a disease appearing in epidemic form in 1829 at several places in France, being very widely diffused in Paris, where 40,000 individuals were affected at one time. It showed many striking analogies with ergotism and with pellagra. The onset was usually marked by gastro-intestinal irritation, nausea, vomiting and dysentery. After a few days (5 to 12) formication and fleeting pain in the hands and feet, like the pricking of needles, sets in; often there was a very intense burning of the soles of the feet. Hyperesthesia existed over large areas of the skin, making the slightest pressure unbearable. After these manifestations of hypersensibility passed off the patients suffered from anesthesia in the soles of the feet, like that occurring in tabes dorsalis. Associated with the nervous symptoms there was usually an outbreak of an erythematous or erisipelas—like exanthem, which spread mostly over the hands and feet, but not infrequently over a large part of the extremities and even over some parts of the trunk. It was only rarely, in the case of old and enfeebled persons, that it ended fatally. Recovery was always slow and there was always a feeling of stiffness and some weakness present for some time after. Post-mortem examinations did not throw any light on the nature and seat of the disease. Children were more frequently affected than adults. The disease usually ran its course without fever and lasted from a few weeks to several months. A historical review shows that the French physicians have for a long time recognized a similarity between acrodynia, ergotism and pellagra.

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Corn may also be infected by ergot. Thus Roulin as quoted by Hirsch, reported the existence in Colombia of a disease of maize caused by the ergot fungus—mais peladero—by reason of which the corn acquired properties injurious to health. In man as a result of eating diseased grain the hair and teeth fall out; but there are never the nervous or gangrenous symptoms peculiar to ergotism. Animals such as pigs and mules suffer in the same way from eating ergotized maize; in these there has also been noted paresis and wasting of the hind legs.

Intoxication occurring in children with all the symptoms of acrodynia has been reported by E. Mayerhofer.[4] In the spring of 1929 he observed two children from the region of Zagreb, who presented all the manifestations of ergotism or acrodynia and who had been fed on contaminated corn. In the corn flour a large content of Ustilago maidis spores were found. The intoxication had the pharmacologic and toxic properties of ergotism. Mayerhofer has expressed himself as seeing a causal relation between cornsmut and acrodynia.

The various theories proposed at present for the explanation of acrodynia do not seem to be satisfying nor conclusive. Thus Feer[5] has suggested that the condition is a neurosis of the vegetative nervous system. This is considered plausible by many. Others on the contrary ascribe it to some unknown virus infection or even to a deficiency of vitamins. The pathologic findings in the few cases autopsied have been rather puzzling and unsatisfactory. It was rather surprising to the author to find that none of the pathologists had paid any particular attention to the condition of the peripheral bloodvessels. Most of the attention has been centered on the state of the nervous system with very puzzling and unsatisfactory results.

In this connection it is desirable to correlate other conditions which hitherto have been conceived to be separate entities such as Raynaud's disease, Buerger's disease (thrombo-angiitis obliterans) and Weir Mitchell's erythromelalgia which conditions have not been satisfactorily explained. Buerger's disease has been ascribed to excessive cigarette smoking among Jewish patients, particularly Russian and Polish Jews. It is of interest in this connection that these people are in the habit of consuming rye bread or "pumpernickel," which is preferred by them to white bread.

Robertson and Ashby[6] have reported on the symptoms of ergotism found among the Jewish people of Manchester as the result of eating rye bread. The general symptoms complained of were coldness in the extremities, numbness and lack of sensation in the fingers, a sensation like an insect creeping over the skin, headache, depression, gastric disturbances, shooting pains, twitchings in the limbs and staggering gait. None of the symptoms complained of were observed among that portion of the Jewish population who ate white bread. It was also found that the symptoms were much more pronounced in the Russian, Polish and German born Jews than in the English born Jews. The latter usually ate white bread, whereas the former found rye bread more palatable and economical. The rye grain examined at Manchester showed an incidence of 1% ergotized rye. It was found that the average Jewish person consumes about ½ pound of rye bread per day. When rye bread was discontinued as an article of diet the symptoms quickly improved.

Thus it is seen that symptoms of ergotism may be due to the somewhat free use of corn or rye contaminated with the Ustilago maidis or Claviceps purpurea. It is further noted that ergot may cause vascular, nervous, gastro-intestinal and atrophic changes.

The chemistry of ergot has been the subject of a large number of investigations. Numerous substances such as amines and alkoloids have been extracted. Dale[7] finds that the action of ergot is due to the presence of ergotoxine, tyramine and ergamine. More recently A. Stoll[8] has isolated a crystalline alkaloid, ergotamine tartrate ($C_{33}H_{35}N_5O_5$) which is a definite and chemically pure alkaloid and which has marked potency. It is a pharmacologic antagonist to adrenalin and inhibits the sympathetic nerve endings. It lowers the basal metabolism and causes a diminution in heat production and has a marked action on the uterine musculature. In a dilution of 1-2,000,000 it acts on the guinea-pig uterus and is thought to be the specific alkaloid of ergot. Human beings have been found to be more sensitive to its effects than animals.

In his experimental work on rats the author has observed the effects produced by the feeding

and injection of ergotamine tartrate. A solution of 2½ mgm. was injected twice weekly for three weeks and the drug has also been administered in the drinking water of the animals in the proportion of 0.001 gm. to 8 ounces of water. A series of 6 young white rats were used for the ergotamine experiments and there were 4 normal animals for control.

The treated animals seemed quieter than the controls. There was a definite cyanosis of the tip of the tail in all of the 6 rats. The cyanotic portion of the tail seemed very tender to the touch and the animals manifested marked discomfort when the tail was handled. A dry gangrene developed in the tail of one of the rats. There were no pronounced nervous manifestations observed thus far (one month observation). The temperature of the ergotamine rats was on the average one degree lower than that of the controls as measured by rectal temperature readings. The animals are still under observation and complete data with pathologic studies of the peripheral circulation are to be presented at a later date.

For the present it is merely desired to emphasize the fact that our various cereal foods are frequently contaminated with numerous varieties of fungi which may be etiologically related to such similar clinical conditions as acrodynia, Raynaud's disease, erythromelalgia, Buerger's disease and even pellagra. It is important to note that a large part of the infants' dietary is formed by farina, oatmeal, corn and other cereal products. The author was able to demonstrate the presence of *ustilago* spores in samples of corn meal bought at retail. Likewise rye and wheat flour were found to harbor these smut spores. Ustilago spores obtained from commercial corn meal were grown on sterilized corn meal media. They were then extracted with acid alcohol. The resulting product when injected into an adult rooster caused a blackening of part of the comb, thus demonstrating the ergot effect and vascular toxicity of the ustilago fungus.

There is much in medical history and literature in favor of this causal relationship between grain fungi and the vaso-motor conditions mentioned above. Although the complete equation of cause and effect has not been fully demonstrated in this brief report, it is merely desired to point out these very important facts and relationships. As to the ergotamine (Stoll) which is considered to be the pure principle of ergot the author thinks that it is merely one of the principles which acts on the vaso-motor sympathetic and that there may well be other chemical substances of a similar nature which may show neurotoxic properties and which as yet have not been isolated and which may explain other actions of the drug. Furthermore the different types of ergot seem to have somewhat different properties depending on the type of grain affected. This may explain the various minor differences in the clinical symptoms, in some the nervous manifestations being more pronounced and in others the vascular symptoms.

SUMMARY

1. The comparative frequency of fungus infection in our common cereals is noted. There are over 600 species of these grain parasites recorded of which 205 are found in the United States.

2. The manifestations of grain intoxication are described as found in the common domestic animals.

3. The question of ergotism is discussed and its clinical manifestations described.

4. The conditions of acrodynia, erythromelalgia, Raynaud's disease, Buerger's disease and pellagra seem in many respects similar and may be explained by grain intoxication due to fungi. The variations in the vaso-motor reactions may be explained by the variety of ergot constituents in the various cereal fungi.

5. The pure ergot alkaloid (Stoll) is described.

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CERVICAL PHLEGMON FOLLOWING LOCAL TONSILLECTOMY: REPORT OF FOUR CASES*

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Acute suppurative inflammation of a subcutaneous connective tissue following tonsillectomy is of infrequent occurrence, only one hundred and eleven (111) cases having been reported in the literature—with 21 fatalities.

This paper comprises a series of four cases seen at Cook County Hospital during my residency there with a discussion of the probable causative agent or agents producing such a complication. These four cases were the first encountered in that institution where an average of 3,600 tonsillectomies are performed each year, one-third being performed under local anesthesia.

Case 1. A colored man, aged 29 years, who re-entered the hospital six days after a local tonsillectomy had been performed. He complained of difficulty in opening his mouth and extreme soreness upon swallowing, especially on the right side of the throat. A large indurated, tender swelling was present on the right side of the neck, just below the angle of the mandible. The swelling extended from thel ower border of the digastric fossa to the level of the hyoid bone along the anterior border of the sterno-cleido mastoid muscle. The skin over the swollen area was normal in appearance. His temperature was 101.2 F., and the white blood count 15,600. A slight prominence of the right tonsillar fossa was noted at this time. External hot, moist dressings and irrigations with hot water inside the mouth over the region of the angle of the jaw were used. During the next three days the external swelling increased and a distinct bulging was present in the tonsillar fossa. A curved hemostat was then inserted through the right tonsillar fossa and considerable foul smelling pus liberated, which upon culture revealed non-hemolytic streptococcus, staphylococcus and fusiform bacilli. Within a week the symptoms had subsided except the trismus which did not disappear entirely until two months later.

Case 2. A girl, aged 22 years, was re-admitted to the hospital nine days after a local tonsillectomy has been performed. She stated that four days after the operation she experienced difficulty in opening her mouth. She was out of the city at the time and did not return until five days later. No treatment was used in the interval. She complained of considerable soreness upon swallowing in the right side of the throat and was able to open her mouth only about one-quarter of an inch. The temperature was 100.6 F., and the white blood count was 16,800. A moderate sized, brawny, tender swelling was noted in the right side of the neck, just anterior to the angle of the mandible extending from the upper third of the sterno-cleido mastoid to about level of the hyoid. External moist dressings and intraoral irrigations with hot water were used. The following day an incision was made through the right tonsillar fossa but no pus was obtained. During the next five days the external swelling increased until it had reached the level of the cricoid cartilage, and another incision was made through the tonsillar fossa and again no pus was obtained. Under gas anesthesia an external incision, one inch long, was made over the swollen area and a moderate quantity of pus was found deep in the tissue after insertion of a forcep. A culture of the pus revealed fusiform bacilli and non-hemolytic streptococcus. A rubber drain was inserted and after a week the discharge of pus ceased and the swelling gradually subsided. The trimus did not disappear completely until four months later.

Case 3. A girl, aged 16 years, was re-admitted to the hospital eight days following a local tonsillectomy. She stated that three days following operation she experienced difficulty in opening her mouth, and she noticed swelling on right side of the neck. The temperature upon admittance was 100.4 F., and the white blood count was 17,200. During the following three days the external swelling increased and some bulging of the right tonsillar fossa was noted. An incision was made through the tonsillar fossa and considerable foul smelling pus exuded. Considerable gas escaped upon opening the fossa. Culture of the pus revealed the same organisms as Cases 1 and 2, together with a so-called pseudo gas bacillus.

Case 4. A man, aged 36 years, re-entered the hospital five days after a local tonsillectomy had been performed. He complained of difficulty in opening his mouth and swelling on the left side of the neck, just below ramus of the mandible. The temperature upon admittance was 101.6 F., and the white blood count, 16,400. External heat was used for the next three days. An incision was then made through the left tonsillar fossa, but no pus was obtained. The following day, under gas anesthesia, an external incision was made and considerable pus was obtained. A rubber drain was inserted. All symptoms subsided except the trismus which lasted about ten weeks. Culture of the pus revealed essentially the same organisms as in the first three cases.

The onset of this complication was noted in all of these cases within three to five days following tonsillectomy. In each case difficulty in opening the mouth was the first symptom noticed and likewise was the last to disappear.

The symptom "Trismus" is no doubt due to an involvement of the internal pterygoid muscle

*Read before the Section on Eye, Ear, Nose and Throat, Illinois State Medical Society, East St. Louis, Ill., May 6, 1931.

and to a lesser degree the pterygo-mandibular ligament. That these special structures are injured or infected more often than the number of phlegmons following tonsillectomy would indicate is shown by the relative frequency of trismus following local tonsillectomy. I have seen several cases of trismus of this sort without any evidence of phlegmon or infection of any sort. These usually subside within a few days. Unfortunately the fluid used in injection was cultured only in the last two cases and these cultures showed a considerable number of colonies of staphylococcus albus. Two of these cases required external incision and drainage.

A detailed description of the anatomy of the palatine tonsil in relation to the pharyngeal wall will not be discussed here, however, a brief description of such relations will probably clarify the reasons why the complication being discussed may occur.

The palatine tonsil rests in the fossa between its two pillars.[1] On its lateral surface it is separated from the superior constrictor muscle of the pharynx by its capsule. Immediately lateral to this muscle is a large somewhat triangular space filled with loose, fatty tissue. This is the parapharyngeal space and it is bounded laterally by the internal pterygoid muscle, medially, by the lateral pharyngeal wall and posteriorly by the pre-vertebral fascia. The space is limited below by the sheath of the large vessels which pass through it and superiorly by the base of the skull. The space is divided by the styloid process with its attached musculature into the lateral pharyngeal space anterior and the lateral pharyngeal space posterior. These two spaces do not communicate. This probably explains why vascular involvement of the great vessels is not so likely in this sort of complication as the great vessels lie in the posterior compartment.

The contamination of this space during operation is no doubt the cause in the majority of cases where this complication arises. However, I am led to believe that this space is entered far more frequently during local tonsillectomy than the number of complications would indicate. Why this complication does not arise more often is to me a perplexing question.

Many plausible theories have been advanced as to the causation:

Hochfilzer[2] recently reported a case in which osteomyelitis of the mandible with sequestration occurred together with the phlegmon and he believed that certain saprophytic germs became virulent and caused the infection.

Chamberlin[3] in 1925 described a technic by which he defined the lateral limits of the tonsil by pulling the tonsil out of its fossa, thus producing a retro-tonsillar space. This method aimed at preventing passage of the needle through infected tonsillar tissues which is one of the main theories as to the causation of the complication in question. It is not always possible to define the lateral boundary of the tonsil either because of previous infection or because of an anatomical variation. Chamberlin has had one case since using this method.

Freer[4] believed that the main cause of the complication was trauma to the superior constrictor muscle, thus producing an area of lowered resistance in the part. This theory is not tenable in view of the fact that such a complication rarely arises after general anesthesia. There must be as much trauma produced under general anesthesia as under local anesthesia, and my initial figures tend to disprove this also.

Kaiser[5] reported one thousand (1000) tonsillectomies in children without such a complication.

Shapiro[6] claimed that contaminated instruments and contaminated solutions played a major role in the causation. He also believes that a curved needle is more likely to enter the parapharyngeal space than a straight one. I cannot believe that this last mentioned factor is a cause. The depth of the point of a straight needle is no easier to determine than that of a curved one. If the needle is inserted just under the pillar so that its outline can be seen fairly distinctly I believe that a curved needle is less liable to enter the parapharyngeal space. Insertion of a straight needle is much more difficult if inserted between the pillar and the tonsil and surely insertion of a straight needle through the pillar into the peritonsillar space is more likely to pass beyond its intended point.

It may be possible that an anaerobic infection of this space was present before the operation and was lighted up by the operation.

Some authors believe that operation too soon after a throat infection is a potent factor. None of the cases mentioned here had experienced a recent sore throat. I believe, however, that this may be a factor in some cases and certainly ton-

sillectomy should be deferred for at least two weeks after a mild sore throat, and four to six weeks after a severe tonsillitis or quinsy.

All of the causes mentioned are probable factors and I believe the most important factors to be two-fold. First, too deep an injection, that is, deeper than four millimeters. Second, contaminated solution. For this last reason I advise freshly prepared solutions of novocaine or whatever solution is used for anesthesia.

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DISCUSSION

Dr. Ralph H. Woods, LaSalle: I wish to compliment the doctor on this most valuable paper telling us what not to do. It has been my particular pleasure to have perused this paper prior to its presentation, and I think the essayist is to be congratulated on the selection of a topic so intensely practical, even though one of infrequent occurrence. The most valuable papers presented to any association are those that emphasize what not to do to avoid complications or disaster, but it requires considerable courage to present papers of this type and it is regrettable that so few have that courage.

Dr. Hayden's explanation of the etiology to my mind is quite satisfactory. In the larger hospitals solutions are made up in advance in quantities, and there is every possibility of contamination. Again, it is possible that the needle might be contaminated, possibly from the tonsil itself or from a previous patient. In private practice one should maek the solution fresh for each case. I use a 2 per cent. novocain which does not require a deep injection for a nerve block, nor does it require as much as when using a 1 per cent. solution; hence, less edema, less trauma and quicker healing. I tried out a solution of 1/1000 nupercaine (Siba) on four cases and all of them gave secondary oozing on the fourth and fifth days, evidently from delayed healing by devitalization. However, the anesthesia was wonderful.

The subject of abscess following tonsillectomy calls to my mind a large series of x-ray plates of lung abscesses displayed in an eastern hospital some time ago, all following tonsil operations under general anesthesia. The question in my mind at the time was, why? The operating rooms were right across the hall and at that particular period a number of tonsil cases were being operated on. In each instance the patient was on his back, in which posture there is every possibility of toxic material being aspirated. In one case I recall there was more blood than the suction apparatus would remove, giving origin to another possible accident.

Dr. F. B. Balmer, Chicago: Dr. Hayden emphasized my point in his paper when he referred to infection following the use of needles and also suggested the use of ligatures without the use of needles in avoiding infection. I have not had the misfortune of encountering a phlegmon following a tonsillectomy where either a general or local anesthetic was employed. The side position described was also referred to by Dr. Mullin as a factor in avoiding postoperative complications where a general anesthetic is used. May I emphasize again, that where a patient is on the side, blood or other material is not liable to be drawn down into the larynx or bronchi during respiration but is readily removed with the aspirating machine or allowed to accumulate in the buccal fossa or hollow of the cheek and removed when convenient. Further, the field of operation is not obscured at any time which permits of better work. Dr. Hayden is to be congratulated for his very fine paper.

Dr. J. W. Hayden, Chicago (closing): Frankly, I believe that contaminated solutions are the major cause in the production of these things. However treated, every solution of novocain or every needle is contaminated when it is used, when it touches the mucous membrane. It is very fortunate that more complications do not arise.

TRAUMATIC LESIONS OF THE UROGENITAL TRACT*

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The purpose of this paper is to point out some of the salient factors concerning traumatic lesions of the urogenital tract. One cannot emphasize too much the question of diagnosis. In the past we had to depend entirely upon the history of the injury plus the physical findings. In many instances external trauma is not present. Blood in the urine is the most common finding. Shock may or may not be present.

We believe, and will show in a lantern slide demonstration, the value of intravenous urography as an adjunct in completing the diagnosis. We are of the opinion, however, that this procedure when indicated, taking into consideration shock, gives valuable information as to the immediate procedure in management.

In this paper we will consider the genito-urinary tract in the following manner: Trauma of the kidney, ureter, bladder and urethra. Conservatism should be the password in relation to trauma of the kidney. Three of the most impor-

*Read before the American Urological Association, Memphis, Tennessee, May, 1931.

tant factors should be taken into consideration. First, the general condition of the patient; second, the extent of the injury, and third, the element of time.

The question of shock, which is a most important one, will be managed in the same way as it would in any other patient suffering from a similar condition. At this point I would like to emphasize that the use of intravenous urography will be left to the discretion of the surgeon in charge of the injured patient.

The next question of importance is to find out the extent of the injury to the kidney. Is the rupture within the kidney itself, or has it extended through the true capsule, or has it invaded the peritoneal cavity? In other words, it is imperative that we know whether we are dealing with an extra-capsular thing or an intraperitoneal tear.

The foregoing statements are of utmost importance, as the management depends so much on the interpretation of this condition. We believe that intravenous urography at this point is of the greatest advantage. If the rent is extraperitoneal, and the amount of extravasation is

Fig. 1. Skiodan showing a ruptured kidney involving the ureter.

small, we advise watchful waiting and again to repeat the first operation, viz., pyelogram to find out whether or not the extravasation has increased in size. That is most important because so much depends on whether or not the hemorrhage is entirely within the kidney and is draining into the bladder. In other words, the question of decision plays an important role in all cases of traumatic kidney.

Other factors must not be forgotten, such as blood pressure, blood counts, hemoglobin, all of

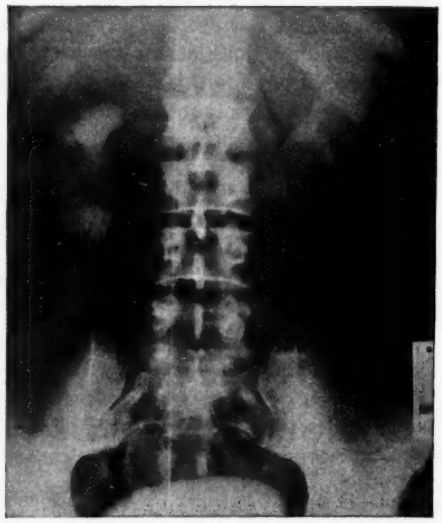

Fig. 2. Skiodan showing a ruptured kidney.

which add to the information desired in this class of case. So, again we want to emphasize the question of time.

Treatment. First, as stated before, conservatism should not be forgotten. If the rent is intraperitoneal, immediate surgery is indicated, provided the general condition permits. In many of those cases the kidney may be detached from its pedicle and resting in the peritoneal cavity, or in the perinephric space without any apparent injury to the patient externally. I have a specimen here to show in such a case.

We believe that in all cases of intraperitoneal tear that the kidney should be immediately removed whether partially detached. Of course, always remove when totally detached. (Note: Two case reports of one kidney in the peritoneal cavity which died following operation. The second case, due to a bullet wound in which the kidney was entirely detached, made an uneventful recovery.)

The big problem we have is in the class of case where the hemorrhage continues for some days. When the injury is confined to the kidney, our problem is to decide whether surgical intervention is the best procedure, or allow the patient to hemorrhage with the hopes that a hematoma will form which will prevent further

hemorrhage. I might add that in many cases, while the hemorrhage ceases and the urine becomes clear, the patient will later show considerable pathology. In three cases at Cook County Hospital in later years a complete atrophy of the kidney was observed. In one case a giant hydronephrosis appeared.

Where hemorrhage is extra-capsular, we advise the removal of all clots of blood and a careful examination of the kidney. By so doing one is able many times to save the kidney, which is the second consideration in the management of all these cases. We do not believe that in every case that has a rupture of the kidney and has a large hematoma present a nephrectomy is indicated. We believe that the kidney withstands a great deal of insult and yet when properly managed will recover. So, as stated, if the clots and hematoma are removed and the bleeding points sutured, a drain introduced in the pre-kidney space, the patient will make a good recovery and a good functioning kidney will be the happy result. However, there is one point that I should like to give you for your consideration, i. e., the introduction of paraffin catheters for the class of case where the injury is within the kidney and no hematoma appears. By so doing the pathology of the kidney, due to pressure necrosis, may be entirely avoided.

In all cases of trauma of the kidney a flat x-ray plate should be made to determine the condition of the kidney on the opposite side. In all kidney surgery a flat x-ray plate should be made to determine the condition of the kidney on the opposite side, the importance of which I shall demonstrate in a slide in a few minutes.

Rupture of the ureter may be divided into two general headings: Is it a complete or an incomplete tear of the ureter? The management there will be the introduction of a ureteral catheter at the time of injury in order that a continuity of the ureter may be present, which is easily done with a catheter in situ. One or two sutures may be employed. In many cases the catheter itself will suffice. By so doing a drainage has been established and the regeneration of the ureter will follow. In trauma of the urinary bladder the only question to decide is, are we dealing with an intra- or extraperitoneal tear? This, too, is well described with the use of intravenous urography. We believe that all the other methods heretofore such as Vaughan-Rudnick test, the use of injection of fluid, which we heartily oppose, the use of skiodan, will tell exactly where the rent is and the extent of the extravasation.

In all cases of intraperitoneal tear, an abdominal incision is routine, repair of the tear in the bladder, a drain to the peritoneal cavity, and the introduction of retention catheter is the method advised. If we are dealing with an extraperitoneal condition, we believe in all cases to repair the bladder, institute drainage in the prevesical space and use a retention catheter.

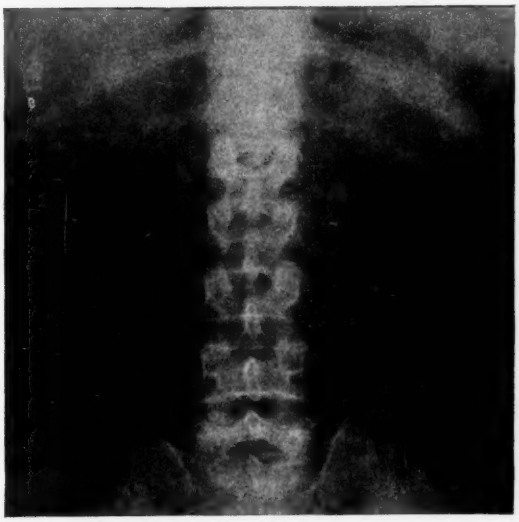

Fig. 3. Skiodan showing the kidney ruptured in half.

There is a considerable amount of difference of opinion as to this procedure. The industrial surgeon usually advises the use of a retention catheter and takes a chance as to the recovery. This, of course, depends altogether as to the condition of the urine, whether you are dealing with an infected or an uninfected urine. I have a few lantern slides to show how slough may take place with a superficial urinary extravasation.

The question of the urethral rupture is one that has caused an endless chain of argument. We believe the most important factor is to establish immediate drainage through the urethra. We believe, when possible, in doing suprapubic cystotomy and a retrograde sound, using the Davis method of two sounds, one through the meatus and the other through the bladder, thereby introducing a retention catheter.

The hemorrhage in the perineum due to trauma will usually take care of itself after the introduction of a large catheter, but if a hema-

toma should appear it is quite simple to open and drain. However, when the severed ends of the urethra are not intact it is easier to approxi-

Fig. 4. Sodium Iodide showing a ruptured bladder.

mate both ends if a urethral catheter has been introduced by the method mentioned above. In other words, the urethra now contains a splint by virtue of the catheter being in place. This simplifies the method of doing an end-to-end anastomosis of the urethra. It is not necessary to make this anastomosis water tight. We have modified the Davis sounds so they are a little more adaptable to the case.

Much credit should be given to George G. Davis for devising this method of using two sounds in managing a ruptured urethra.

CONCLUSIONS

1. Intravenous urography is of value in early diagnosis of trauma of the urogenital tract.

2. Early surgical intervention when indicated.

3. The question of shock and time an important factor.

4. A ruptured kidney is not always an indication for a nephrectomy. In many cases the clots may be removed and the kidney sutured with good results.

5. The management of a ureteral tear accomplished by doing a retrograde catheterization and screwing this catheter into one introduced from below.

6. Intravenous urography in bladder rupture will show whether or not one is dealing with intra- or extra-peritoneal tear.

7. In rupture of the urethra it is important to use two interlocking sounds, one introduced from the bladder through a suprapubic cystotomy, and the other through the meatus, thus establishing coaptation of the severed ends of the urethra and drainage.

25 East Washington Street.

THE ROLE OF ORTHOPEDIC SURGERY IN INFANTILE PARALYSIS

JOHN L. PORTER, M. D.,
EVANSTON

The orthopedic surgeon approaches the problem of the treatment of infantile paralysis purely from the standpoint of function. To him the problem is "How much of the function of the damaged limb, or group of muscles, can be restored?" and from the time when the first right-angled splint is applied, during the acute stage, on through the periods of nursing care, massage, braces, muscle training, and active exercises, to the final operation for correction of deformities, his treatment will depend upon the answer to the question, "How can the utmost function be best secured?"

The problems presented are mainly mechanical ones, resulting from loss of muscle contraction, loss of the normal muscle-group balance, and the pull of gravity, all tending to produce contractures and joint distortion.

It is not my purpose to discuss in detail the various mechanical and surgical procedures useful in the treatment of poliomyelitis, but to accentuate a few of the most important early measures and general principles governing their use.

Clinically, it is helpful to divide the history of a case of infantile paralysis into three stages, although these are not sharply defined, and vary in length.

First: The acute stage, when muscle tenderness still persists and possibly some irregular fever remains and the paralysis is very likely to slowly increase. This period may last four to six weeks, and right here is when the patient may pay the penalty for our doing too much or too little. This is the stage when nursing care and splinting are most important, and mild, gentle massage may be begun. It is during this early stage that two things must be borne in

mind—the danger of fatigue and of contractures.

With the co-operation of the pediatric service, we have outlined a definite guide for the care of acute cases in the Evanston hospital. This was formulated chiefly for the guidance of the nursing staff, but it is so important that we should all follow and be familiar with it. Let me quote:

"Patient should be kept flat in bed and lying as straight as possible, with changes made in position, to rest the patient. In severe cases the moving and lifting should be done entirely by the nurse.

"The bed should be firm and flat, with *no* dip in the middle, and a very small pillow, if any, used. A wide strip of thin building board between mattress and spring insures a flat surface.

"Where paralysis involves head, neck or arms, head should not be propped up on pillows, on account of danger of over-strain of neck muscles. A pillow or sandbag on each side of head prevents rolling, and the head should be lifted for the patient, but only occasionally.

"In the case of a paralysis of the upper arm and shoulder, the arm should be held at shoulder level, with the hand pointing toward the top of the bed, to prevent stretching of the deltoid and bicep muscles. A small pillow or sand-bag along the lower part of the arm and on the outside of the forearm will usually hold this position. It case they do not, a bandage about the wrist and fastened to the top of the bed will hold the arm in the desired position.

"Many times the patient prefers to lie on the side, with the knees flexed. This is harmful, as it puts a strain on two of the muscles most apt to be affected—the gluteus maximus and the quadriceps. It is much better to have the patient flat on his back, with the legs out straight, to prevent contractions. In case they have been permitted to keep the knees bent and contractions *have* developed, they must be straightened out, with pillows or callapsible inclined planes.

"In case the legs roll outward, a sand-bag along the outside, to hold the foot pointed straight up, should be used. A cradle or similar device should always be used to prevent the dragging of the bed-clothes on the feet.

"In case of involvement of the lower leg, regardless of what muscles are involved, the foot should be supported at a right angle. This can best be done in a metal or plaster splint.

"To take the soreness out of the muscles the patient should be lifted in a sheet into a tub-bath, of a temperature of about 100°, in which a cupful of sea salt has been dissolved.

"Massage should not be begun until sensitiveness of muscles has disappeared, which is usually about the third week, and then only every second day, for five to ten minutes.

"A few passive motions given under the direction of the doctor or physiotherapist are of as much value as the massage, but should not be given without definite instructions.

"Over-zealous treatment is often as detrimental as none, because muscle fatigue is the one great danger to be avoided.

"Here at this time is when the detailed attention to little things may mean much in determining the degree and rapidity of improvement."

Second Stage: The period of regression or improvement:

(a) Probably some return of muscle function occurs during this period in a very large percentage of cases, even without any treatment, but in many instances it goes unnoticed or is lost because contractures have developed in opposing muscles with consequent overstretching of the weakened muscles and tendons.

It is at this time that the great value of physiotherapy and muscle re-education with proper braces to maintain muscular relaxation is evident.

Braces, especially in upper arm and lower leg involvement should be worn day and night. Along with massage and muscle re-education goes tank exercises. That is, voluntary exercises carried out under water, thus abolishing the effect of gravity. Voluntary motions impossible in the air are often developed to considerable power under water. Massage alone will help to keep muscles active but exercise is necessary to increase the power.

An interesting example of what can be accomplished by persistent, intelligent physio-therapy and especially of tank exercises is seen in Governor Roosevelt of New York who spends a month twice a year doing exercises under water with the direction of a skilled physio-therapist. He not only carries on the duties of Governor of New York, but he threatens to invade the White House.

In the more severe cases, this is the period when, with carefully contrived braces, the patient can be taught to so use what muscle power he has as to be independent and get about alone. Muscle activity often continues to improve for several years. Where contractures at hips, knees or ankles have occurred, they must be overcome, and the patient taught to make use of such muscle power as remains, to get about with braces and crutches. Undoubtedly there are many helpless wheel-chair cases that have given up treatment as hopeless in which sufficient muscle power would be found to get them up on crutches with proper persistent training and exercise.

Just a word about electricity which has had a

great appeal in all diseases of the nervous system. All forms from galvanism to diathermy have been tried in poliomyelitis but their value is extremely doubtful. At present the concensus of opinion seems to be that some apparatus that delivers a galvanic current with a rhythmic make-and-break so that each individual muscle can be made to contract and relax at a fixed interval, is helpful. It combines passive movement with a degree of active muscle contraction which the patient cannot voluntarily produce. It should be used only by a skilled technician.

During this second stage no operations are undertaken, except possibly some division of tendons or fasciae where contractures have developed which cannot be corrected by other means. Braces skilfully made with lock joints, stop joints and pressure pads will usually control distortions and contractures and enable the patient to get about. Not until all possible muscle function has been secured should major operations be undertaken.

A word of caution concerning cases where abdominal or spinal muscles are involved. Corsets or jackets of leather, plaster, or celluloid should be applied early because spinal curvatures are sure to develop after the patient begins to sit up and they often become very severe and develop with amazing rapidity after the patient begins to walk.

We now come to the third stage, the so-called "stationary period" after all possible muscle improvement has been secured. This period begins from one and one-half to two and one-half years after onset and continues indefinitely. The word "stationary" is a misnomer because, untreated, the distortions and contractures continue to grow worse. Both patient and parents have become tired of the long months of treatment and have decided nothing further can be done. It is at this stage that the various stabilizing operations which have developed in orthopedic surgery during the past fifteen years have their great value. A tendon transplant or arthrodesis or bone block may enable the patient to discard braces or crutches. Spinal fixation by means of bone grafts after the method of Hibbs or Albee has proven very satisfactory in the extreme cases of scoliosis where the patient is disabled and made uncomfortable by the ever increasing rotation and visceral pressure.

Whether operation is indicated and what the most valuable surgical procedure will be must be decided only after a careful study of the physiological mechanics involved and an accurate estimate of the amount of improvement that can be secured, and such operations should only be undertaken by one with training and experience.

To sum up, from the orthopedic standpoint, the things to impress upon the parents and physicians in charge are:

1. Don't overdo. Rest is most important thing, and fatigue must be avoided.

2. Splint the joints so as to prevent contractures.

3. Begin massage very guardedly, as too much massage is as fatiguing as exercise.

4. As soon as paralysis is stationary begin muscle exercises and education, *not before.*

5. As soon as active use of the paralyzed member is permitted, braces must be devised and prescribed for each case.

6. With the active exercises and muscle training encourage independence. Never give up. Some patients remain in bed because they cannot get out alone, but with braces might walk when once upright, and there are comparatively few cases that cannot be taught to get out of bed or out of a chair alone.

7. Advise operative procedures only after as much improvement as possible has been secured by physiotherapy and muscle training and then only after thorough consideration of *all* the mechanical problems involved.

Society Proceedings

COOK COUNTY

CHICAGO ROENTGEN SOCIETY

Joint Meeting, Wednesday, February 10, 1932

Crushing Injury to the Chest Followed by Complete Recovery .....Harry Olin
Unusual Periostitis in Children.....C. B. Rose
Multiple Bacillus Abortus Osteomyelitis of the Spine .....L. F. Fisher
Anencephaly with Specimen.....M. J. Hubeny
Pneumopericardium Following Foreign Body in the Esophagus .....R. A. Arens
Megalo Colon.....E. L. Jenkins
Triple Lesion in One Hip.....I. S. Trostler
Some Unusual Mediastinal Lesions.....A. Hartung
Malignancy Originating in a Pagets Disease..... .....R. J. Maier
Giant Cell Tumor of Humerus That Responded to Deep X-Ray Therapy.....M. I. Kaplan

Liver and Spleen Visualization by Thorotrast.....
.....C. H. Warfield

The demonstrations will be by Radiographs and Slides.

CHICAGO MEDICAL SOCIETY

Regular Meeting, Wednesday, February 17, 1932

SYMPOSIUM ON CANCER

"The Doctor and Cancer Control".....Burton J. Lee
Professor, Clinical Surgery, Cornell University Medical College, New York

"Cancer of the Uterus".....William C. Danforth
Associate Professor, Obstetrics and Gynecology, Northwestern University

"Radiosensitive Tumors" .....Max Cutler
Director of Tumor Group, Michael Reese Hospital.

"The Role of the Pathologist.....Richard H. Jaffe
Pathologist, Cook County Hospital

"Ways and Means of Organizing for Group Study of Cancer" .....C. C. Little
Managing Director, American Society for the Control of Cancer

Discussion opened by: Charles Davison, Karl Meyer, R. W. McNealy, J. P. Simonds.

CHICAGO SOCIETY OF INDUSTRIAL MEDICINE AND SURGERY and CHICAGO UROLOGICAL SOCIETY

Joint Meeting, Wednesday, March 2, 1932, 8:30 P. M.

"Pelvic Fractures" .....Kellogg Speed
Discussion.....William R. Cubbins

"A Study of Certain Urological Complications Associated with Fractured Pelvis..Edward William White
Discussion.....Charles M. McKenna

Fellowship Dinner, Medical and Dental Arts Club, 6:30 P. M.

F. W. Slobe,
President Chicago Society of Industrial Medicine and Surgery.

Alfred E. Jones,
President Chicago Urological Society.

S. S. Graves,
Secretary Chicago Society of Industrial Medicine and Surgery.

L. L. Veseen,
Secretary Chicago Urological Society.

PIKE COUNTY

The January meeting of the Pike County Medical Society was held in Pittsfield, January 28, 1932.

After an excellent fried chicken dinner served at the Pike Cafe, the meeting was held in the Lions Club Rooms.

The Secretary read a communication from the State Secretary in regard to appointing a member to work in conjunction with the State Society American Legion Contact Committee, and the Secretary was elected to such position.

The Secretary then gave a membership and financial report.

The first paper on the program was "Surgical Risks" by Dr. Frank A. Norris of Jacksonville, giving in a clear and complete way the importance of the many factors that enter into the question of whether a patient is in good condition to go through a surgical operation. The condition of the heart and blood, the urinary findings, the condition of the lungs: everything demonstrable by the x-ray, and other factors were named as important for consideration at such time, and that time should always be taken where possible, to correct such conditions.

The second paper, "Hemorrhage in Pregnancy and Labor," was given by Dr. E. D. Canatsey of Jacksonville. This paper was very thorough in presenting all known causes of hemorrhage in these cases, and gave the treatment for every such emergency as it might arise.

The third paper was on "Poliomyelitis" and given by Dr. F. Garm Norbury of Jacksonville. The author stated that, as he had so recently had the subject presented, he would endeavor to take it up in a somewhat different manner than he had intended. This he did very interestingly, drawing upon the latest in the literature, upon his own personal experience and upon that of the staff of the Norbury Sanatorium, a member of which he is.

This paper was, as were each of the others, scholarly and informative. They were listened to with much interest by all present and discussed by quite a number of physicians, but no lengthy discussion took place.

A resolution was adopted, thanking the Jacksonville physicians for the excellent program presented, and to the Pittsfield physicians for their entertainment.

F. N. Wells, Secretary.

PULASKI COUNTY

In Memory of our Esteemed Professional Brother;

WHEREAS, God in His infinite wisdom has removed from our midst one of our members, Dr. Hall Whiteaker, of the staff of the Anna State Hospital;

WHEREAS, Dr. Whiteaker was a charter member of the Pulaski County Medical Society and through the years a loyal member, filling the different offices, and a strong advocate for Medical organization;

WHEREAS, He was held in highest esteem as a general practitioner in this county, was elected to the Legislature from this district, served with honor in the World War and for a number of years served with distinction as a member of the staff of Anna State Hospital;

WHEREAS, We the members of Pulaski County Medical Society greatly appreciate the distinction and heights in the profession attained by our colleague. Although we feel our great loss, we shall cherish in memory the friendship and association of him whom we loved;

Therefore Be It Resolved, That in expression of our most heartfelt sympathy to send a copy of these resolutions to Mrs. Whiteaker, that a copy be spread in the records of this Society and a copy be sent to the ILLINOIS MEDICAL JOURNAL.

H. J. Elkins, President.
Otis L. Hudson, Secretary.

WARREN COUNTY

The regular mid-winter meeting of the Warren County Medical Society was held at Monmouth on Thursday, February 18, 1932. The meeting began at 4:30 with Dr. Hermon H. Cole of Springfield as first speaker, the subject, "Mechanical Aspects of Thoracic Disease," illustrated by lantern slides. This was a most interesting story of the mechanics of the chest, especially of a physiological nature, with an evaluation of the modern methods of treatment of chest disease. An interesting discussion followed the presentation by Dr. Cole.

The next speaker, following a 6:30 dinner, was Dr. James H. Hutton of Chicago, who talked on "Recent Advances in Endocrinology." Dr. Hutton briefly reviewed the development of Endocrinology, and paid special attention to the developments of the past few years, telling of the recent discoveries of new hormones and their physiological actions. This talk, too, was thoroughly discussed by a number present, and Dr. Hutton was asked many questions, which were answered.

The meeting was attended by approximately 70 physicians from west central Illinois and eastern Iowa, all of whom were well pleased with the program.

A short business meeting of the Warren County Medical Society was held during the evening, and the following officers were elected:

President, Dr. Ralph Graham, Monmouth; vice-president, Dr. W. M. Crosier, Alexis; secretary-treasurer, Dr. Chas. P. Blair, Monmouth; delegates to Illinois State Medical Society, Dr. C. O. Burgess, Monmouth. Board of Censors, Dr. E. A. Fetherston, Monmouth; Dr. H. S. Zimmerman, Cameron, and Dr. J. L. Sherrick, Monmouth.

A new Constitution and By-Laws which had been prepared by a special committee was unanimously adopted during the meeting.

Chas. P. Blair, M. D., Secretary.

Personals

Dr. Arthur J. Cramp, Chicago, addressed the Macoupin County Medical Society in Carlinville, January 26, on "The People and Patent Medicines."

Dr. Walter R. Fischer, Chicago, spoke on orthopedics, January 27, before the Will-Grundy Counties Medical Society in Joliet.

Dr. William K. McIntyre, St. Louis, addressed the Adams County Medical Society, Quincy, February 8, on "Cancer of the Large Intestine."

Dr. James E. Lebensohn, among others, addressed the Chicago Ophthalmological Society, February 15, on "Radiational Cataract."

Dr. Edmund Andrews, Chicago, addressed the Will-Grundy County Medical Society at Joliet, February 10, on "Intussusception."

Dr. Drew W. Luten, St. Louis, addressed the St. Clair County Medical Society, East St. Louis, February 4, on "Coronary Sclerosis."

Dr. Andrew C. Ivy, Chicago, addressed the Peoria City Medical Society, February 2, on "Physiological Aspects of the Etiology, Symptoms and Treatment of Gastroduodenal Ulcer."

Dr. Frederick Eberson, San Francisco, addressed a meeting at Michael Reese Hospital, February 3, on his recent study on the etiology of poliomyelitis.

The Chicago Society of Allergy was addressed, February 15, among others, by Drs. Samuel J. Taub and Harry S. Arkin on "Asthma Due to Ingestion of Yeast."

At the meeting of the Chicago Council of Medical Women, February 5, Drs. Lena K. Sadler and Mary G. Schroeder spoke on "Preliminary Survey for Emotional Analysis" and "Treatment of Personality Maladjustments," respectively.

The Chicago Surgical Society was addressed February 5, among others, by Drs. Charles B. Puestow on "Studies of the Discharge of Bile Into the Duodenum," and William E. Adams, "Healing of Experimental Pulmonary Tuberculosis by Bronchial Occlusion."

The La Salle County Medical Society was addressed, February 9, by Drs. Robert S. Berghoff, Chicago, on "Syphilis of the Heart," and Arno B. Luckhardt, Chicago, "Ethylene Anesthesia" and "Importance of Animal Experimentation in the Advancement of Medical Knowledge."

The Chicago Gynecological Society was addressed, February 19, by Drs. Louis Rudolph and Andrew C. Ivy on "Internal Rotation of the Fetal Head: From the Viewpoint of Comparative Obstetrics," and Dr. Henry Schmitz, "Technic of Irradiation in Uterine Carcinomas."

At the meeting of the Chicago Roentgen Society, February 10, the speakers included Drs. Cassie B. Rose on "Unusual Periostitis in Children"; Roe J. Maier, "Malignancy Originating in a Paget's Disease," and Maurice I. Kaplan, "Giant Cell Tumor of Humerus That Responded to Deep X-Ray Therapy."

Dr. Andy Hall, state director of public health, announces that health promotion week will be observed in Illinois, April 24-30. The announce-

ment states that prevailing health conditions, which were never more favorable, are a tribute to the foundations on which scientific preventive medicine and public health service are built.

Dr. Russell D. Herrold addressed the Chicago Pathological Society, among others, February 8, on "The Influence of the Acid of Urine on the Growth of Bacteria," and Dr. Henry C. Sweany, "Studies in Hodgkin's Disease: A Primary Lung Tubercle Appearing in a Patient Having Advanced Hodgkin's Disease."

The Peoria City Medical Society was addressed, February 11, by Drs. Raymond W. McNealy on "Recent Advances on the Treatment of Fractures"; Samuel J. Fogelson and Arthur J. Atkinson, "Mucin Therapy in Gastric and Duodenal Ulcer," and Charles A. Elliott and M. Herbert Barker, all of Chicago, "Modern Conception of Renal Disease."

Dr. Ralph Mellon of Pittsburgh lectured under the auspices of the A. O. A., at the University of Illinois College of Medicine, February 5, on "Filtrability of Tubercle Bacillus."

News Notes

—Provisional statistics indicate that mortality from tuberculosis and diphtheria, which, respectively, caused rates of 61.2 and 4.8 per hundred thousand, dropped to new low levels in Illinois during 1931. The general death rate was 11.1 per thousand people, a slight increase over the 10.9 rate of 1930 but lower than any previous record except that of 1921, which was identical. The average annual death rate of 11 for the two years of 1931 and 1930 was the lowest for any two successive years since Illinois was admitted to the U. S. death registration area. Typhoid caused 125 deaths during 1931, giving a rate of 1.6 against a previous low of 1.4 for 1929. The rates from pneumonia (71.6), influenza (21.3) and measles (4.3) were principally responsible for the rise in the general death rate. Poliomyelitis caused 101 deaths, a rate of 1.3, which was almost identical with the 1927 report.

—A two weeks' institute for tuberculosis workers, primarily laymen, will be conducted at Northwestern University Medical School, April 4-16. It will be conducted by the National Tuberculosis Association in cooperation with the medical school and the Chicago Tuberculosis Institute, and will be under the direction of Philip P. Jacobs, Ph. D., director of the extension service of the association. The registration fee is $10. Application blanks may be obtained from the state tuberculosis secretaries, or from the National Tuberculosis Association, 450 Seventh Avenue, New York. Topics for discussion will include child health education, case findings, care of physically substandard children, public health nursing, industrial health service, treatment methods, relation of the tuberculosis campaign to other social and public health movements, relation of the tuberculosis movement to the medical profession, and medical and scientific basis of the tuberculosis campaign.

—According to the state health director, the volume of "preventive practice" in relation to the prevalence of certain diseases subject to control through vaccination and diagnosis by laboratory procedure increased in Illinois during 1931. The amount of toxoid and toxin-antitoxin distributed by the department indicates that twenty-one children were immunized against diphtheria for each case reported in 1931, against sixteen to one in 1930, and eleven to one in 1929. For each case of smallpox fifty-four persons were vaccinated in 1931 compared with fifteen per case in 1930 and twenty-one per case in 1929. Against typhoid, twenty people were vaccinated per case in 1931 compared with twenty-one per case in 1930 and twelve per case in 1929. The diagnostic laboratories of the department of health examined for typhoid thirteen specimens per case reported in 1931 compared with 9.5 per case in 1930. For diptheria there were 2.5 specimens per case examined in 1931 compared with 1.4 per case in 1930. The rate for tuberculosis was 1.5 specimens per case in 1931 and 1.4 in 1930. For these three diseases 40,155 specimens were examined during 1931 against 35,984 in 1930, although the aggregate number of cases reported declined from 18,997 to 16,667.

—Northwestern University is conducting a search for precocious students who meet all university requirements but who are from 13 to 15 years of age. The announcement states that while the problem of what to do with the precocious child after graduation from high school is recognized, no university has attempted to approach the problem by evolving a special program for such students. By precocious, it was pointed out, is implied an intelligence quotient of more than 130 or such youthful attainments as were characteristic of Jeremy Bentham, who

wrote Greek and Latin at the age of 5 and prepared to enter Oxford at 10; Benjamin Franklin, publisher of a newspaper at 17, and George Washington, a professional surveyor at 15. Special provisions will be made to meet the needs of the superior students at Northwestern. There are two such students in the school at present, but it is felt that they have lacked an adequate environment. It is planned to offer this environment to the students next year. Of the four precocious students who have entered the university, one is the author of several novels and many short stories and is now editor of two magazines, and one recently was awarded a Rhodes scholarship to Oxford University. A letter has been sent to a selected list of high school principals apprising them of Northwestern's desire to aid the precocious student.

—The Gehrmann Lectures at the University of Illinois College of Medicine will be delivered in the New Building at 1853 Polk Street, Chicago, and will be devoted this year to the field of Mental Hygiene. They will be given by Dr. C. Macfie Campbell, Medical Director of Boston Psychopathic Hospital and Professor of Psychiatry, Harvard Medical School, on March 15, 16 and 17, in Room 221. The time and titles of Dr. Campbell's lectures are:

March 15, 4:00 P. M., "Schizophrenic Disorders."

March 16, 1:00 P. M., "Preoccupation and Environmental Problems of the Patient."

March 17, 4:00 P. M., "Personal and Environmental Problems and Resources Available for Treatment."

Deaths

Miles D. Baker, Carbondale, Ill.; Medical College of Ohio, 1875; a practitioner for many years in Herrin, Ill.; aged 78; died, February 11, of myocarditis.

William Louis Baum, Chicago; Jefferson Medical College, Philadelphia, 1888; senior dermatologist, St. Luke's Hospital; head of infectious and contagious department, Cook County Hospital, 1892-1912; president of staff, Cook County Hospital, nine years; professor of skin and venereal diseases, Post-Graduate Medical School; Fellow, A. M. A. and American College of Surgeons; Lieutenant-Colonel, M. R. C., U. S. A.; member of numerous scientific societies and social clubs; aged 64; died, February 22, of chronic nephritis and cerebral hemorrhage.

Frank Peirce Beck, Oakland, Ill.; University of Illinois College of Medicine, 1903; past president of Coles-Cumberland Medical Society; a Fellow, A. M. A., surgeon for Pennsylvania and Nickel Plate Railroads; served as examining surgeon during World War; aged 61; died, January 21, of sclerosis of cerebral arteries.

Matthew H. Blackburn, Princeton, Ill.; State University of Iowa, College of Medicine, 1889; a practitioner for many years in Princeton and active in financial affairs; aged 70; died, February 8.

Charles Edward Brummet, Jacob, Ill.; St. Louis University School of Medicine, 1903; aged 60; died, Dec. 27, 1931, in St. Andrew's Hospital, Murphysboro, of angina pectoris.

Adolph Edward De Tuncq, Milbank, S. D.; Marquette University School of Medicine, Milwaukee, 1913; member of the South Dakota State Medical Association; served during the World War; aged 41; died, Dec. 16, 1931, in Chicago, of carcinoma of the pancreas.

Edwin Valentine Heaton, Jacksonville, Ill.; Barnes Medical College, St. Louis, 1896; aged 61; committed suicide by gunshot in the New Douglas Hotel, February 6.

Joseph Grant Killgore, Vermilion, Ill.; Kentucky School of Medicine, Louisville, 1888; member of the Illinois State Medical Society; aged 65; died, Dec. 27, 1931, in a hospital at Paris, of injuries received in an automobile accident.

George C. Lewis, Fairbury, Ill.; Bellevue Hospital Medical College, 1883; aged 77; died, February 11, after long illness.

Adolfo Alfonso Luria, Chicago; University of Illinois College of Medicine, 1895; aged 64; died, February 3, of chronic nephritis.

Robert Groves McCarthy, Chicago; University of Illinois College of Medicine, 1899; aged 55; committed suicide by hanging, in Mark Twain Hotel, February 12.

Looney McCormack, Harrisburg, Ill.; St. Louis College of Physicians and Surgeons, 1898; member of the Illinois State Medical Society; aged 66; died, January 6, in the Lightner Hospital, of appendicits.

E. Franc Morrill, Rock Island, Ill.; Woman's Medical College, Chicago, 1891; member of the Illinois State Medical Society; aged 65; died, January 26, of Addison's disease.

Calmar C. Owen, Chicago Heights, Ill.; Chicago Homeopathic Medical College, 1890; aged 66; died, January 3, of chronic interstitial nephritis.

Arthur A. Radcliffe, Waukegan, Ill.; St. Louis Medical College, 1879; aged 77; died, January 8, in the Victory Memorial Hospital, of injuries received when he was struck by a truck.

Charles Chester Sperry, Marengo, Ill.; Chicago Medical College, 1874; aged 80; died, January 29, of chronic myocarditis and chronic nephritis.

Gustave Tedtman, Chicago; National Medical University, Chicago, 1897; aged 67; died, February 10, of diabetes.

Albert Lawrence Thompson, Makanda, Ill.; Missouri College of Medicine and Surgery, St. Louis, 1898; the third physician brother to die; aged 55; died, February 5, in Holden Hospital, Carbondale, of cancer of the throat.

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